

AQ: The axis of the ridge is moving over California. PM2.5 levels in the SJV are generally low to moderate, except that Fresno has had an extended period of (hourly) 40-55 ug/m³ over the last three nights. The SJV APCD forecaster is unsure as to the cause and speculates it has something to do with a shallow inversion and/or wood smoke. Overall, PM2.5 levels should build by a couple of ug/m³ each day from yesterday to Wednesday of next week – a sustained event. In the DISCOVER-AQ flight area (south SJV) Friday should be the peak day; traffic is generally higher, which may contribute. Weekend levels should drop only slightly (~upper 20's ug/m³) and then levels should build into next week to mid-upper 30's ug/m³ by Tuesday and/or Wednesday. The SJV should be cleaned out by Thursday. The situation should be similar in the north SJV (Sacramento, Yuba City) for PM2.5, but the north SJV is starting cleaner than the south SJV, so levels should stay a little lower there.

Weather:

Friday –

SJV (PODEX/D-AQ) – Fog in the morning similar to today, burning off by 9-10 am.

Models indicate high level clouds moving into the SJV around 1 pm. NWS forecaster forecasted patchy, thin cirrus entering the southern end of the valley around noon, followed by a thin cirrus layer. The cirrus are expected to be at ~30K ft.

PODEX coastal leg (Bay area) – Monterey NWS predicts stratus deck at least 50 miles off the coast tomorrow and minimal to no cirrus. The low level clouds are below ~1500 ft.

PODEX coastal leg (LA) – Oxnard NWS forecasted narrow patch of stratus within 50 miles of the coast, but the main lower level cloud deck would be out past 125+ miles off the coast. Models and forecaster predict high level clouds moving into the PODEX LA region by 10 am.

Note – Monterey forecaster thought that the low level cloud deck would be parallel to the coast, which forecasts more low level clouds near the LA region than the Oxnard office.

Saturday – **SJV** – Cloud deck lower, more ~15K ft. Cloud layer expected to be ~50% opacity.

Sunday – Models bringing in clouds at multiple levels

Rest of the week – The upper level trough is forecast to drop south Wed night, bringing the main trough through CA next Thursday. Both models currently show heaviest precipitation over the northern SJV on Thursday although uncertainty is an issue that far out. Prior to the event, high level clouds are expected Mon, Tue, and Wed and fog issues should be minimal.










DISCOVER-AQ / PODEX Forecast Briefing

January 31, 2013

Melanie Follette-Cook

Bryan Duncan










Fresno

TODAY	TONIGHT	FRIDAY	FRIDAY NIGHT	SAI URDAY	SAI URDAY NIGHT	SUNDAY	SUNDAY NIGHT	MONDAY
								
Areas Fog High: 63 °F	Areas Fog Low: 42 °F	Areas Fog High: 66 °F	Areas Fog Low: 45 °F	Areas Fog High: 67 °F	Areas Fog Low: 46 °F	Areas Fog High: 64 °F	Partly Cloudy Low: 46 °F	Mostly Sunny High: 65 °F

Hanford

TODAY	TONIGHT	FRIDAY	FRIDAY NIGHT	SAI URDAY	SAI URDAY NIGHT	SUNDAY	SUNDAY NIGHT	MONDAY
								
Areas Fog High: 63 °F	Areas Fog Low: 37 °F	Areas Fog High: 67 °F	Areas Fog Low: 38 °F	Areas Fog High: 68 °F	Areas Fog Low: 42 °F	Areas Fog High: 65 °F	Partly Cloudy Low: 44 °F	Mostly Sunny High: 66 °F

Bakersfield

TODAY	TONIGHT	FRIDAY	FRIDAY NIGHT	SAI URDAY	SAI URDAY NIGHT	SUNDAY	SUNDAY NIGHT	MONDAY
								
Sunny High: 63 °F	Clear Low: 41 °F	Sunny High: 67 °F	Mostly Clear Low: 43 °F	Mostly Sunny High: 68 °F	Partly Cloudy Low: 46 °F	Partly Sunny High: 64 °F	Partly Cloudy Low: 45 °F	Mostly Sunny High: 65 °F

Palmdale

TODAY	TONIGHT	FRIDAY	FRIDAY NIGHT	SAI URDAY	SAI URDAY NIGHT	SUNDAY	SUNDAY NIGHT	MONDAY
								
Sunny High: 68 °F	Clear Low: 42 °F	Sunny High: 66 °F	Mostly Clear Low: 44 °F	Mostly Sunny High: 65 °F	Partly Cloudy Low: 45 °F	Mostly Sunny High: 65 °F	Partly Cloudy Low: 42 °F	Mostly Sunny High: 64 °F

Yuba City

TODAY

TONIGHT

FRIDAY

FRIDAY
NIGHT

SATURDAY

SATURDAY
NIGHT

SUNDAY

SUNDAY
NIGHT

MONDAY



Sunny

Clear

Sunny

Mostly
Clear

Sunny

Partly
Cloudy

Mostly
Sunny

Partly
Cloudy

Mostly
Sunny

High: 62 °F

Low: 35 °F

High: 62 °F

Low: 37 °F

High: 63 °F

Low: 40 °F

High: 64 °F

Low: 39 °F

High: 62 °F

Sacramento

TODAY

TONIGHT

FRIDAY

FRIDAY
NIGHT

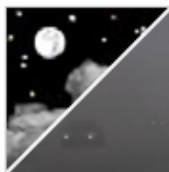
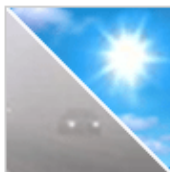
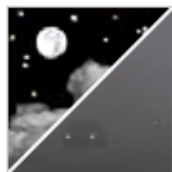
SATURDAY

SATURDAY
NIGHT

SUNDAY

SUNDAY
NIGHT

MONDAY



Patchy
Fog

Patchy
Fog

Patchy
Fog

Patchy
Fog

Patchy
Fog

Partly
Cloudy

Mostly
Sunny

Partly
Cloudy

Mostly
Sunny

High: 63 °F

Low: 37 °F

High: 63 °F

Low: 38 °F

High: 63 °F

Low: 41 °F

High: 63 °F

Low: 40 °F

High: 63 °F

Current Conditions

FRESNO CA

HANFORD CA



Fair
41°F
5°C

Humidity 87%
Wind Speed calm
Barometer 30.28 in (1025.4 mb)
Dewpoint 37°F (3°C)
Visibility 7.00 mi

Last Update on 31 Jan 6:53 am PST



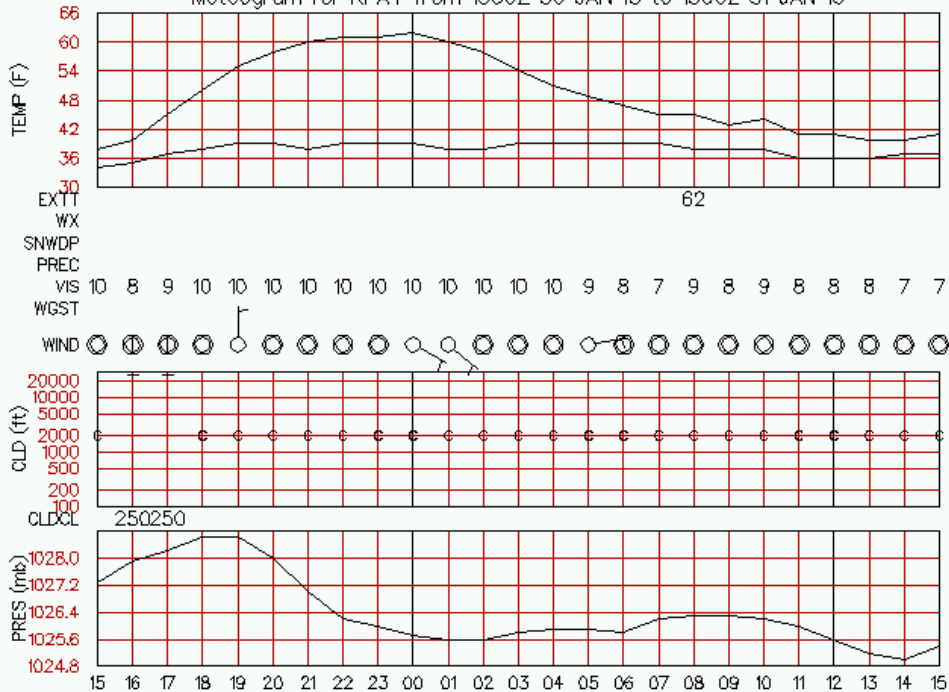
Fog
36°F
2°C

Humidity 93%
Wind Speed calm
Barometer 30.29 in
Dewpoint 34°F (1°C)
Visibility 1.00 mi

Last Update on 31 Jan 7:30 am PST

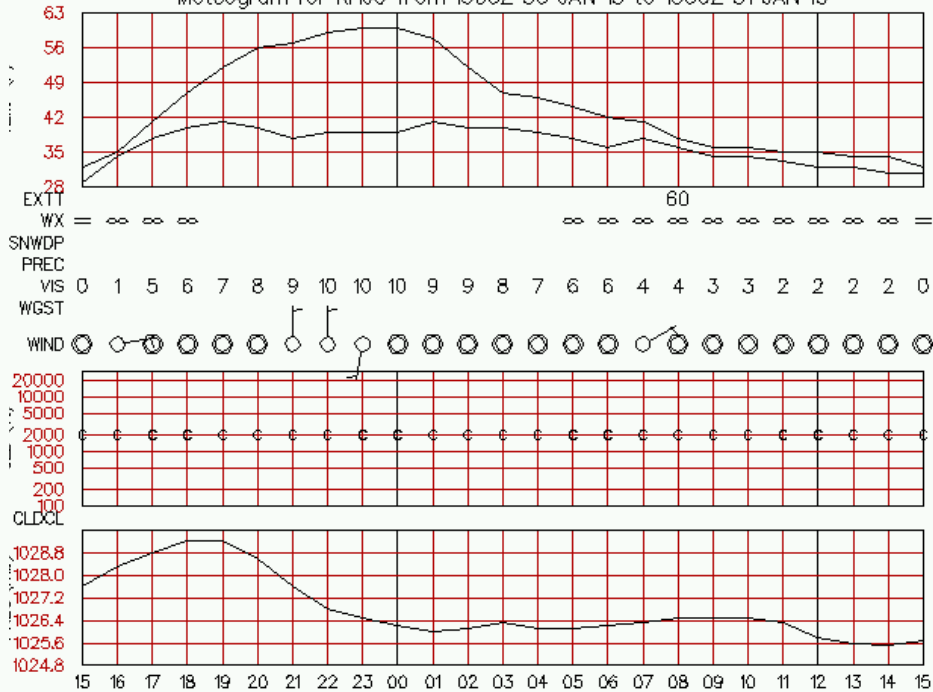
▼ Plymouth State Weather Center ▼

Meteogram for KFAT from 1500Z 30 JAN 13 to 1500Z 31 JAN 13



▼ Plymouth State Weather Center ▼

Meteogram for KHJ0 from 1500Z 30 JAN 13 to 1500Z 31 JAN 13



Current Conditions

BAKERSFIELD CA

Haze

41°F

5°C

Humidity 81%

Wind Speed calm

Barometer 30.27 in (1024.9 mb)

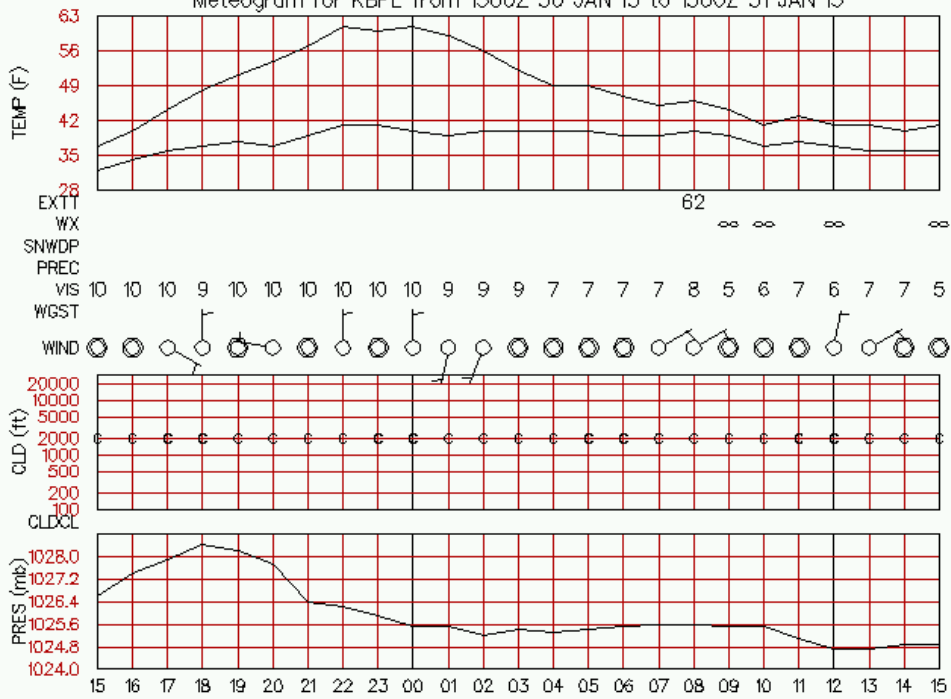
Dewpoint 36°F (2°C)

Visibility 5.00 mi

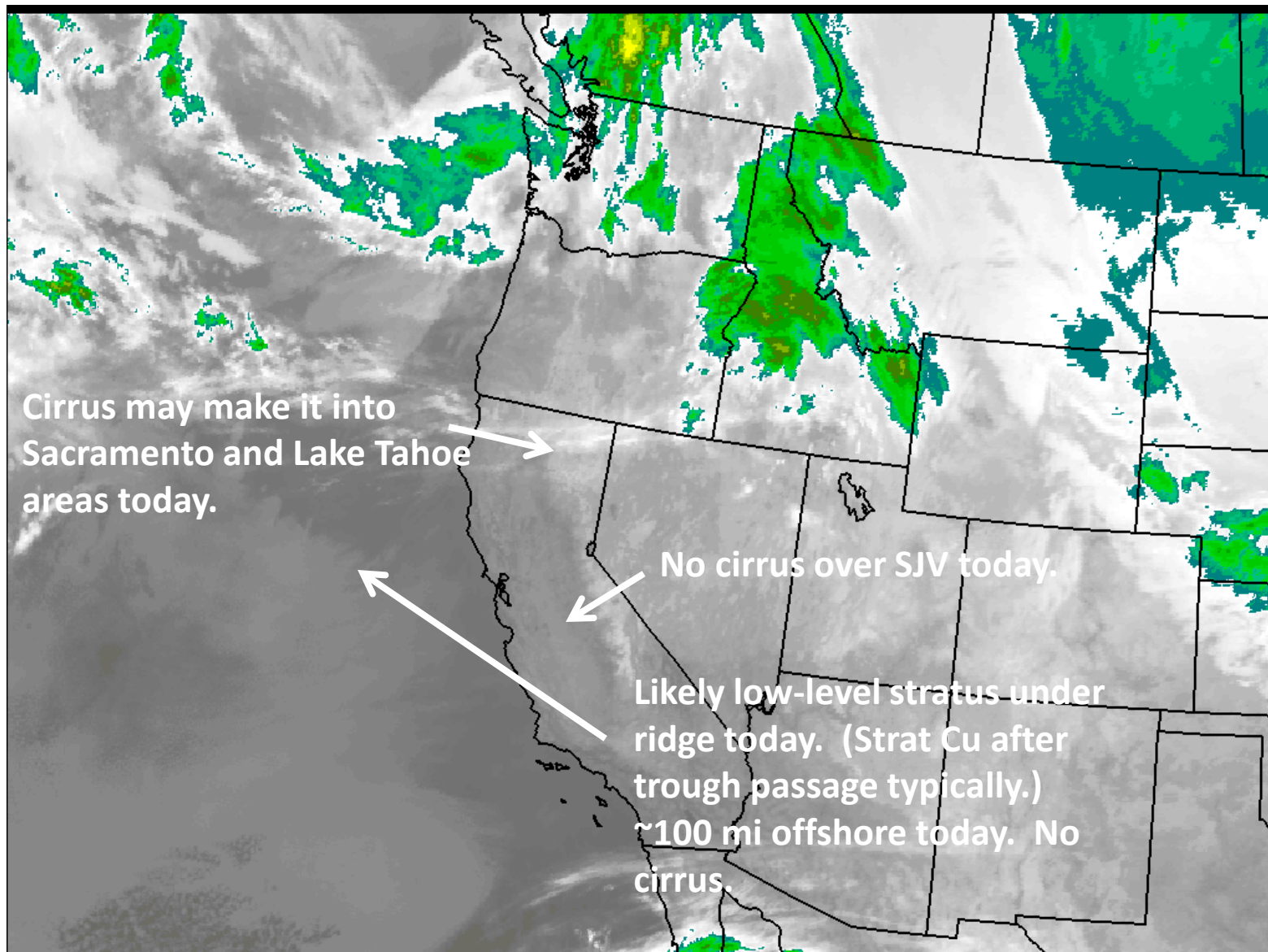
Last Update on 31 Jan 6:54 am PST

🏰 Plymouth State Weather Center 🏰

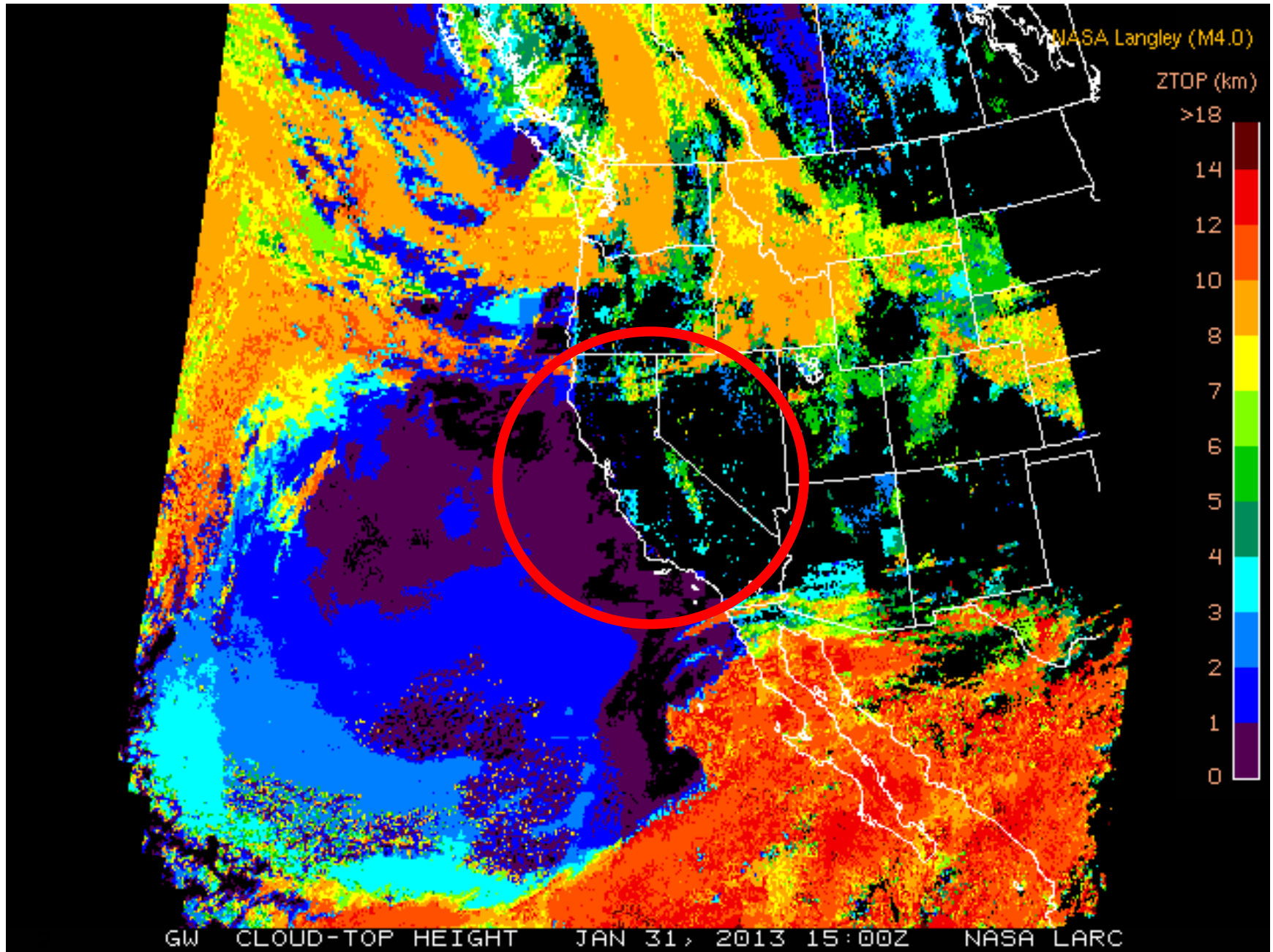
Meteogram for KBFL from 1500Z 30 JAN 13 to 1500Z 31 JAN 13



GOES: IR at 1400 UTC Today

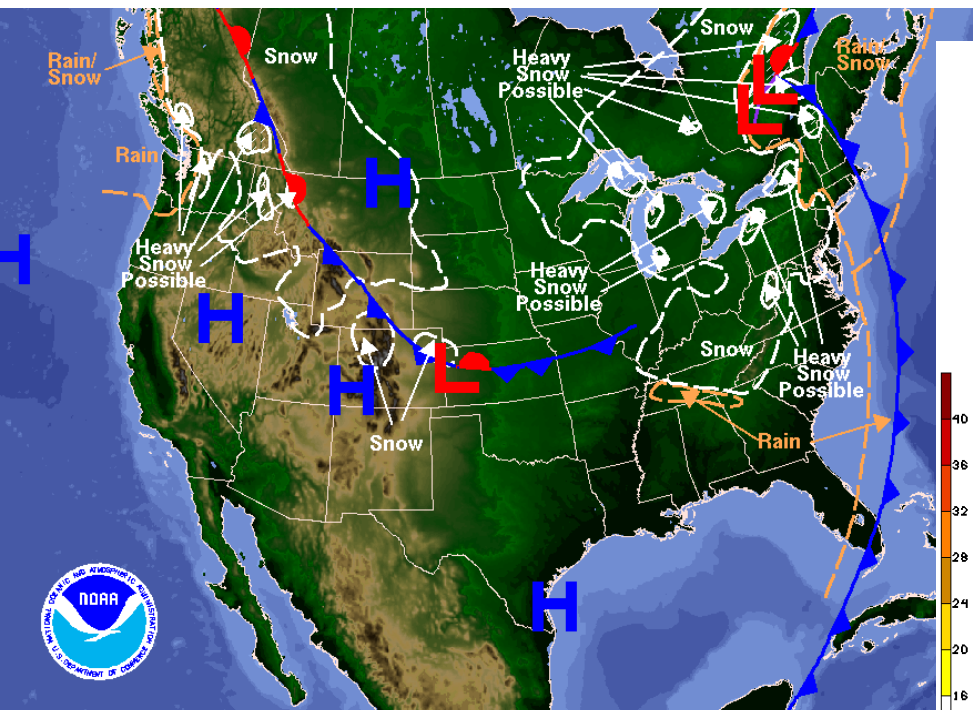


GOES: Cloud Top Height at 1500 UTC Today

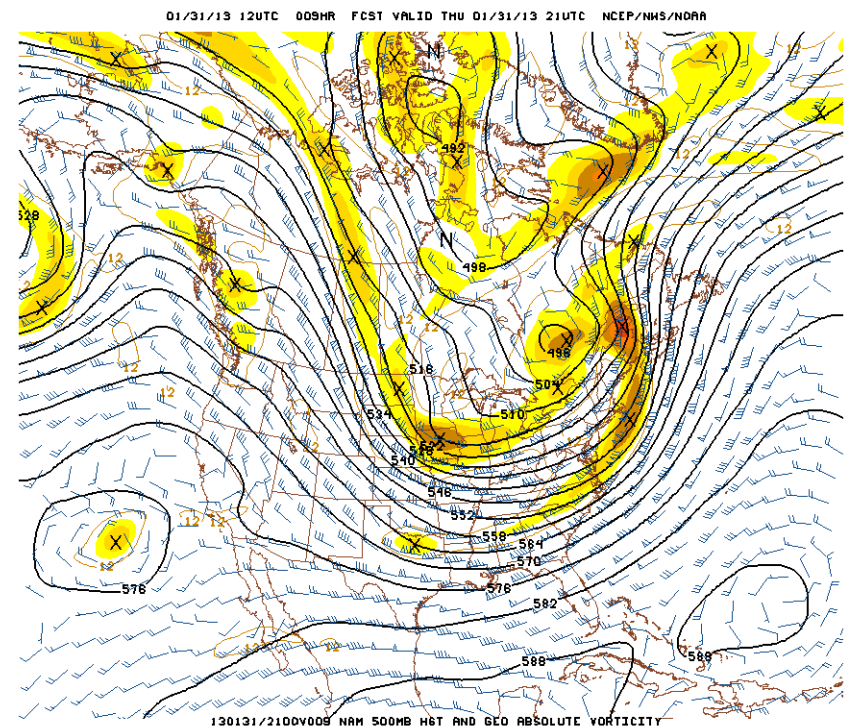


Today:

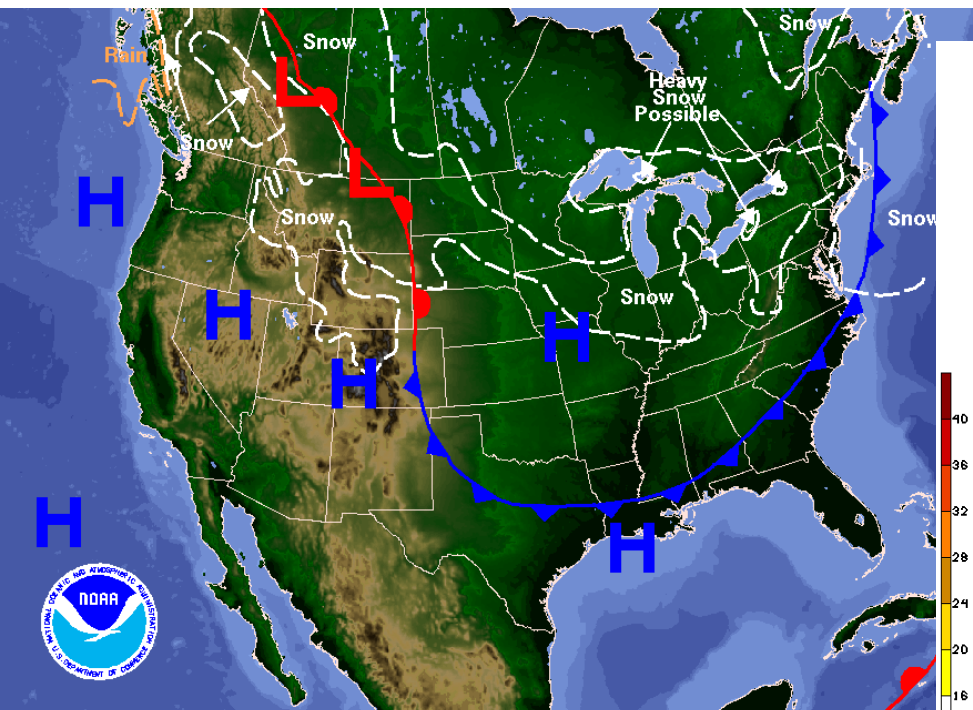
Central CA still under influence of an upper level ridge over the East Pacific.



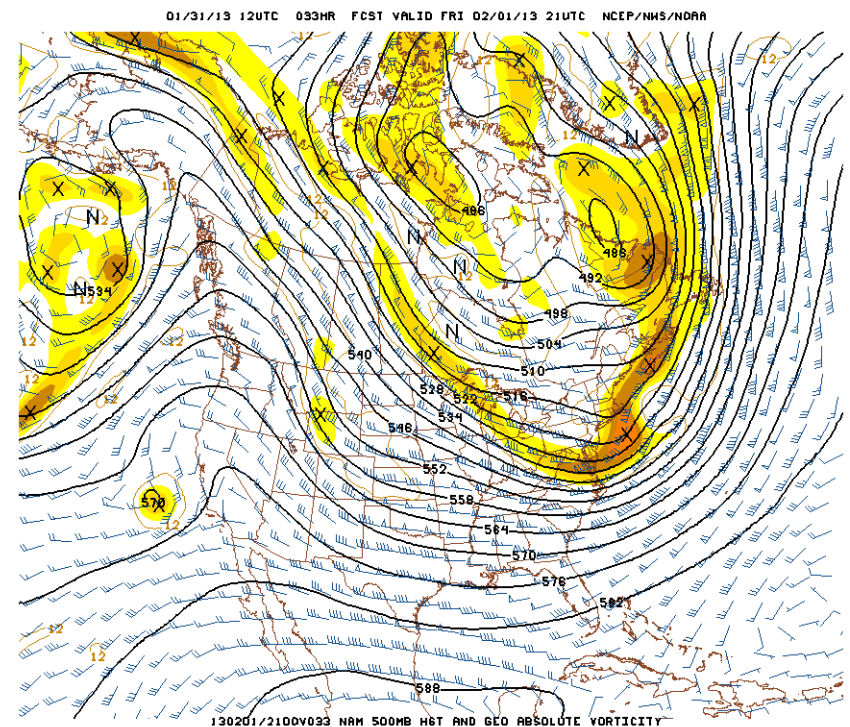
Weather Forecast for Thu, Jan 31, 2013, issued 3:46 AM EST
DOC/NOAA/NWS/NCEP/Hydrometeorological Prediction Center
Prepared by Ryan based on HPC, SPC, and NHC forecasts



Tomorrow (Friday): Ridge moves over CA



Weather Forecast for Fri, Feb 01, 2013, issued 3:49 AM EST Thu, Jan 31, 2013
DOC/NOAA/NWS/NCEP/Hydrometeorological Prediction Center
Prepared by Ryan based on HPC, SPC, and NHC forecasts



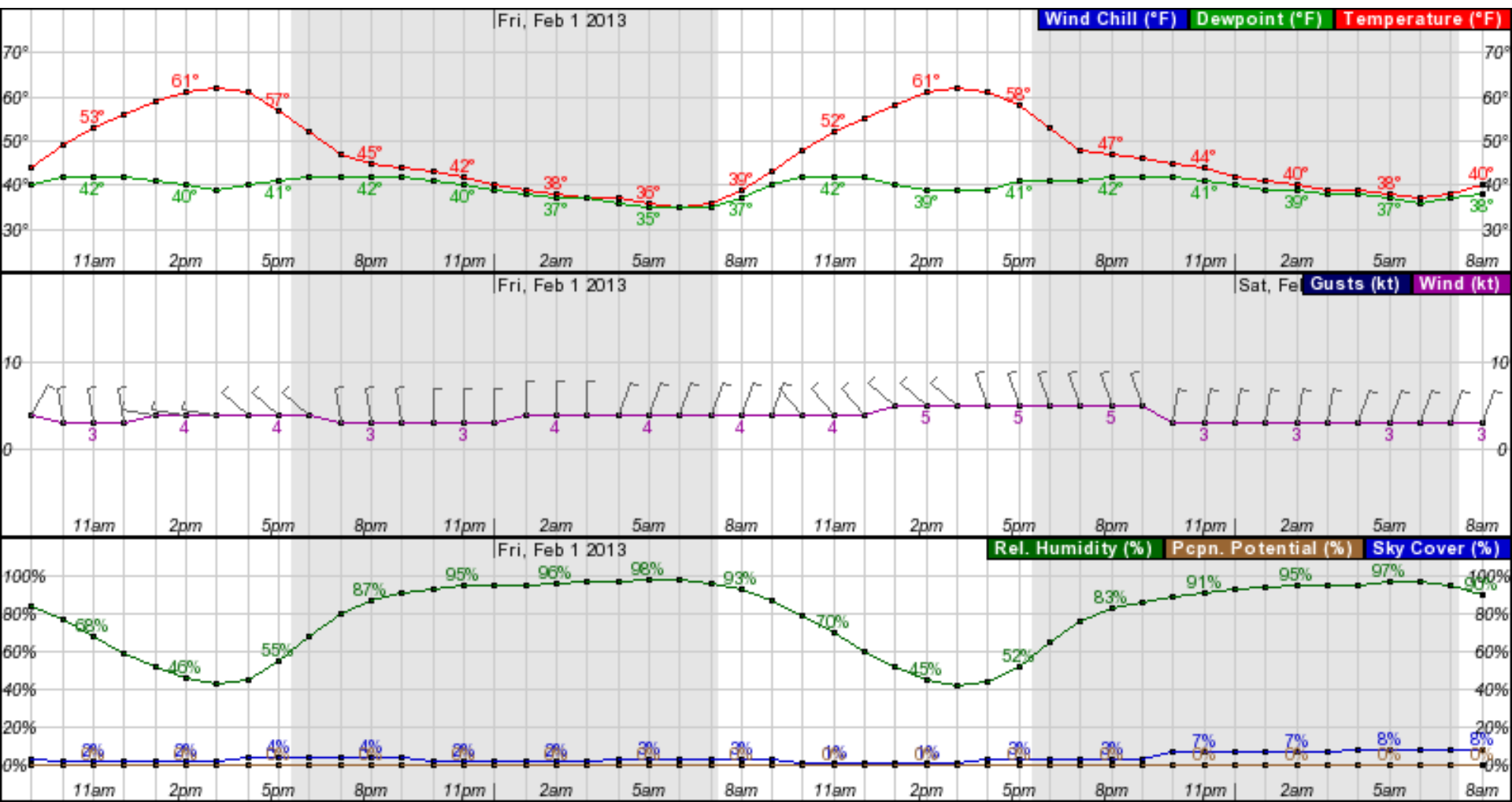
Yuba City (Northern extent of Bay area leg)

Today: Sunny

Friday: Clear skies, light winds, RH > 95% – morning fog likely

Today →

Friday →



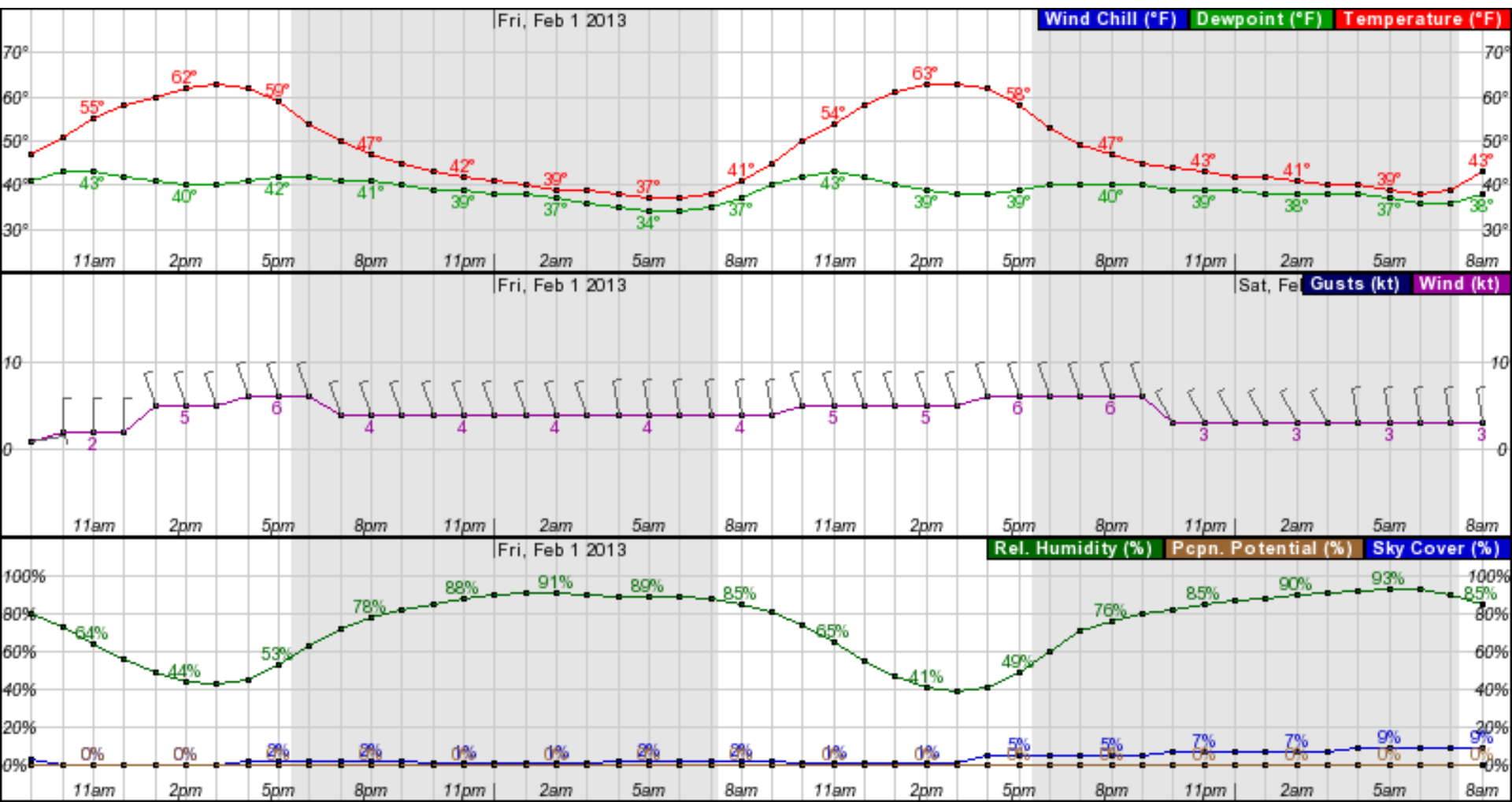
Sacramento

Today: Sunny

Friday: Clear skies, light winds – morning fog possible

Today →

Friday →



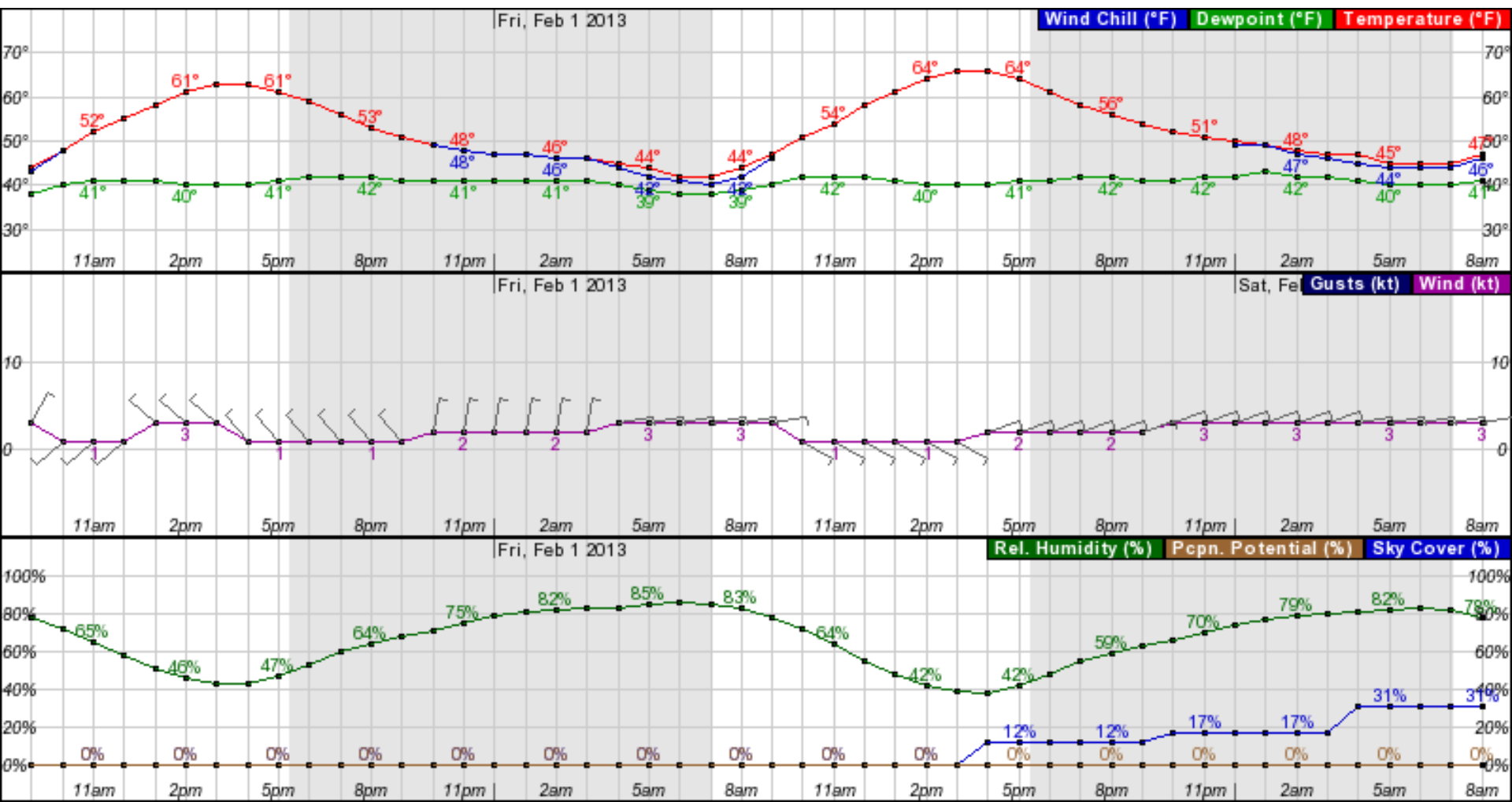
Fresno

Today: Sunny

Friday: Clear skies, light winds – morning fog possible. Clouds increasing slightly as the day progresses.

Today →

Friday →



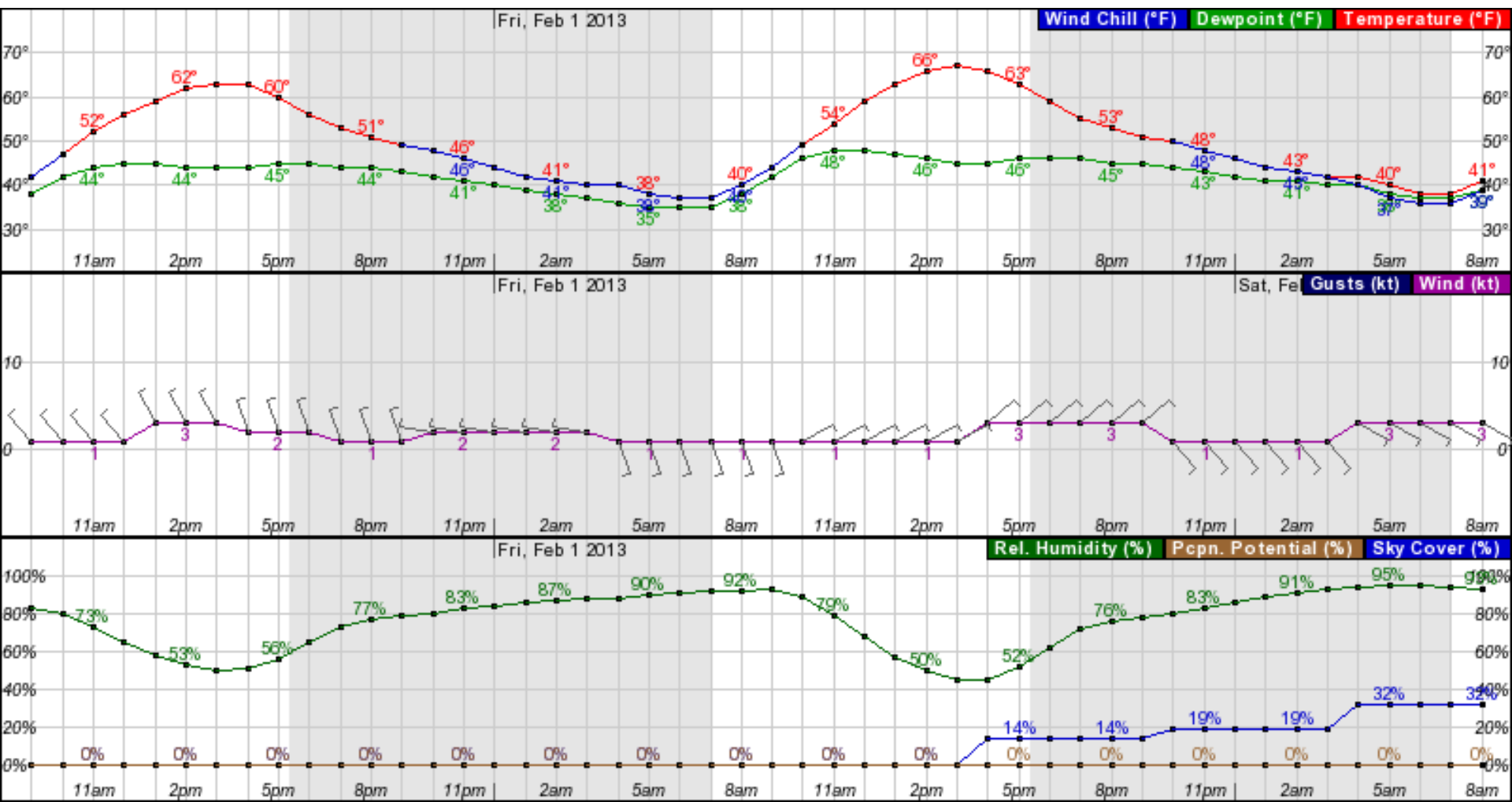
Hanford

Today: Sunny

Friday: Clear skies, light winds – morning fog possible. Clouds increasing slightly as the day progresses.

Today →

Friday →



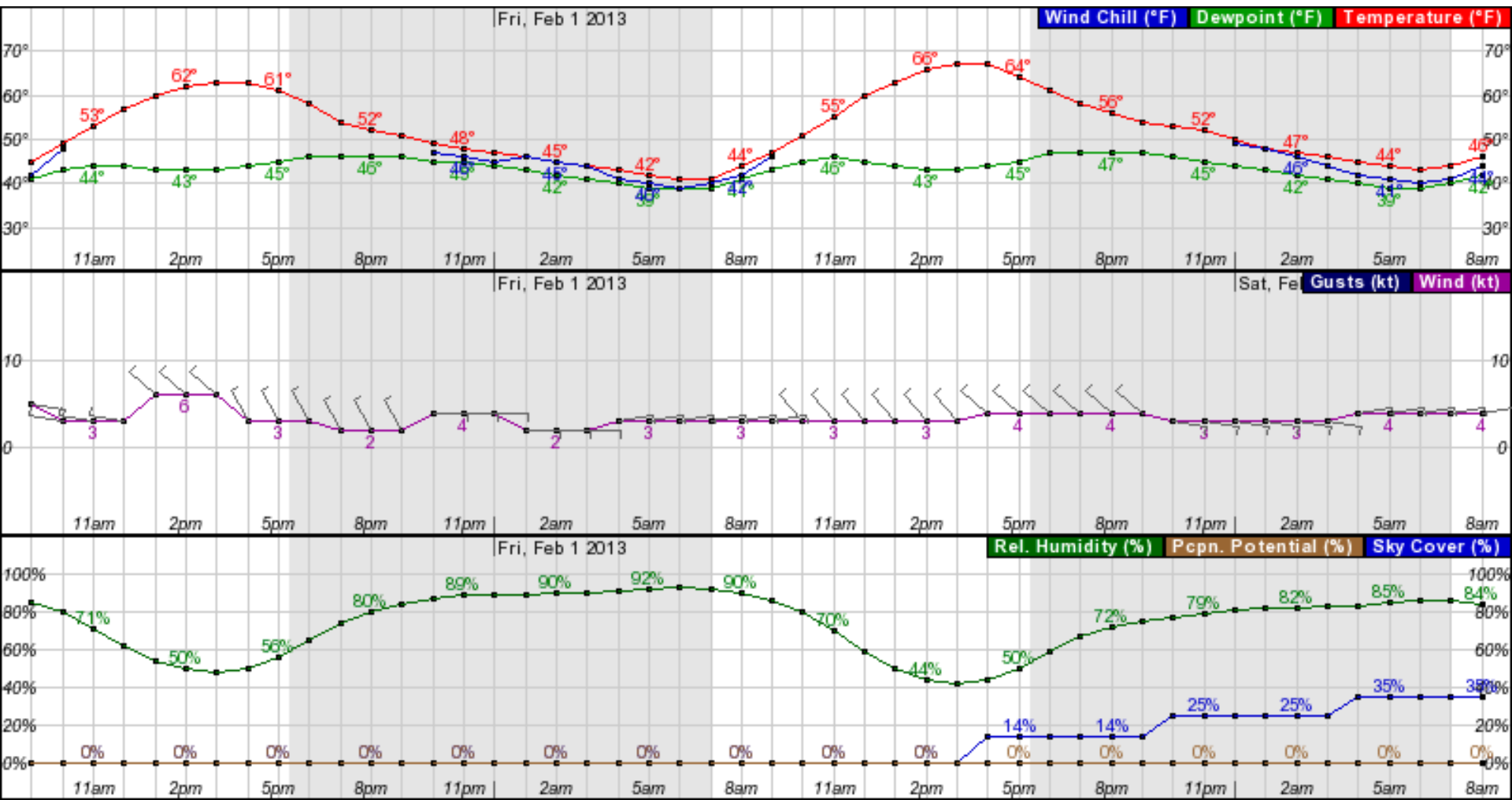
Bakersfield

Today: Sunny

Friday: Clear skies, light winds – morning fog possible. Clouds increasing slightly as the day progresses.

Today →

Friday →

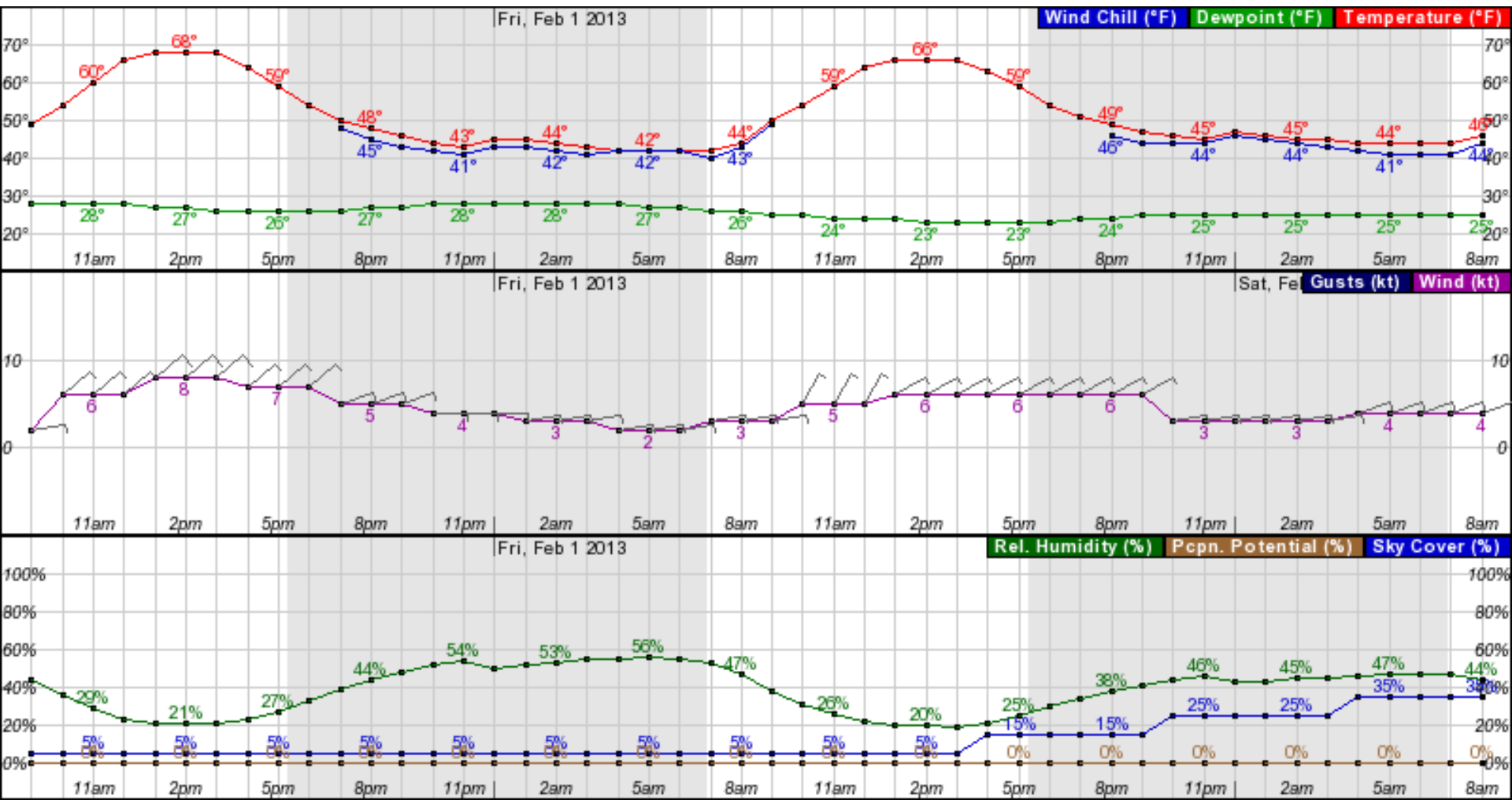


Palmdale

Today: Sunny

Friday: Sunny, light winds forecasted

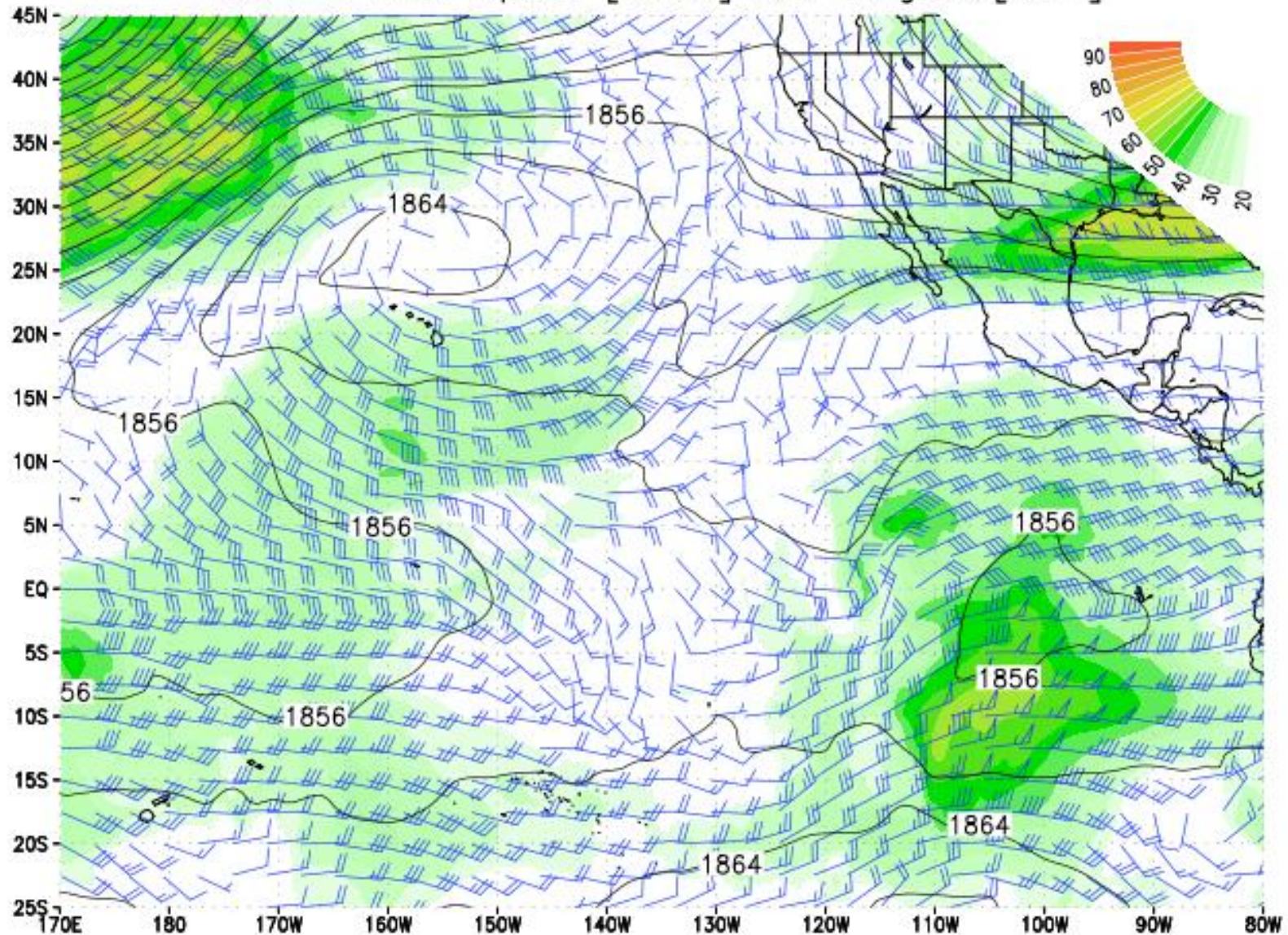
Today → Friday →



GEOS-5: Friday 18Z = 10 PST

NASA/GMAO - GEOS-5 Forecast Initialized on 00z 2013-01-31

70 hPa Wind Speed [knots] and Heights [dam]

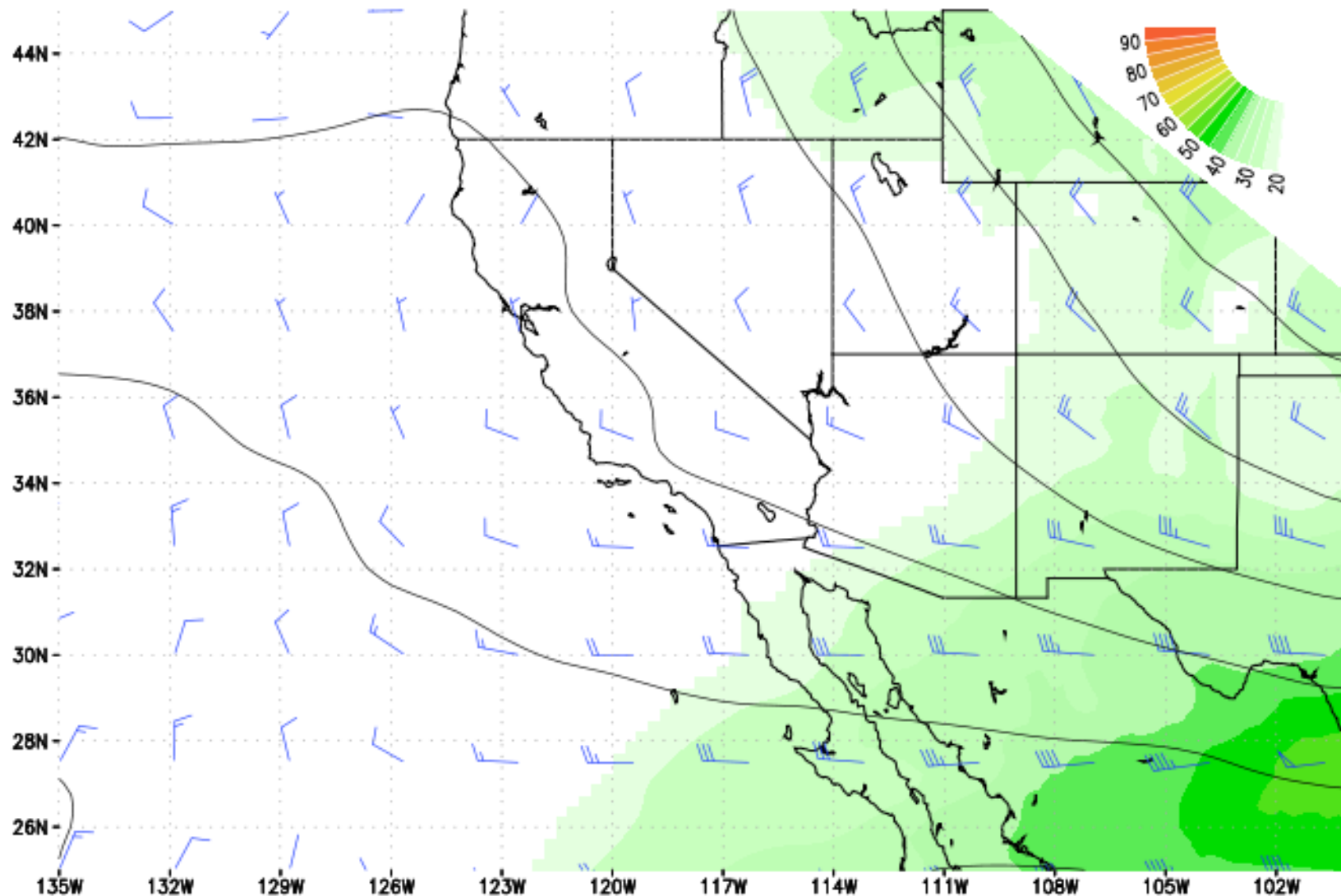


42 hr forecast valid Fri 18z 2013-02-01

GEOS-5: Friday 18Z = 10 PST

NASA/GMAO - GEOS-5 Forecast Initialized on 00z 2013-01-31

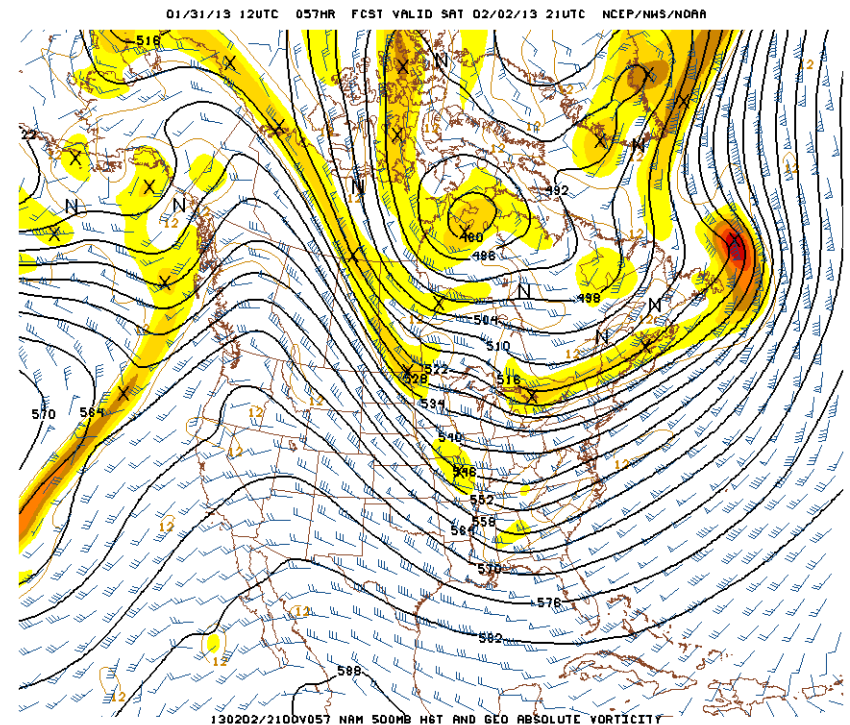
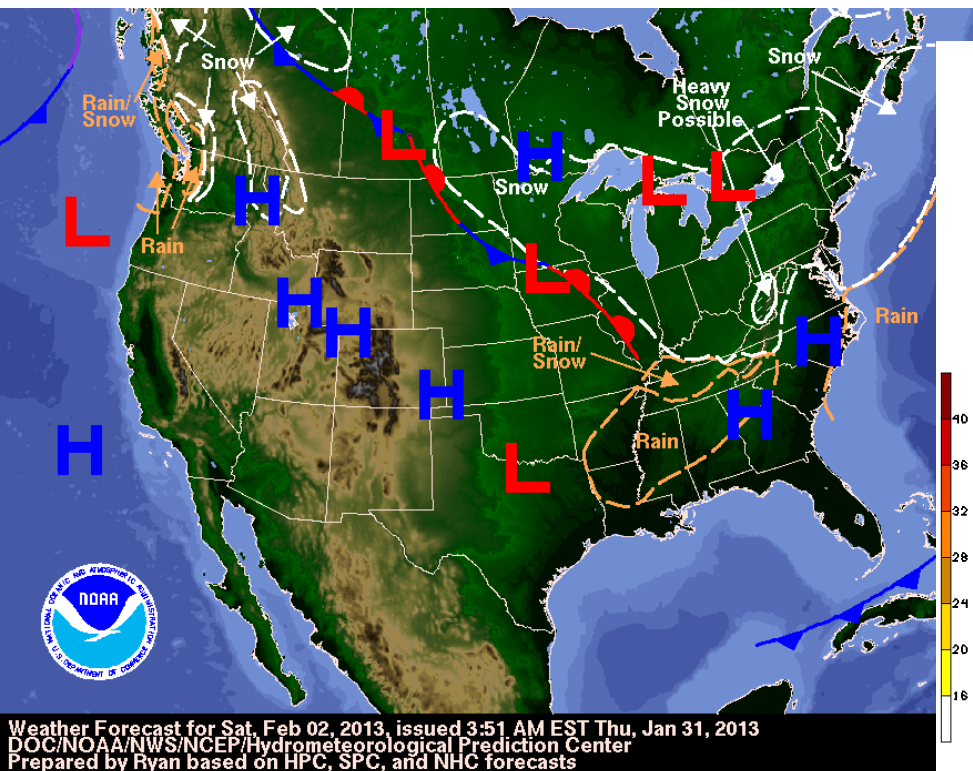
70 hPa Wind Speed [knots] and Heights [dam]



42 hr forecast valid Fri 18z 2013-02-01

Saturday:

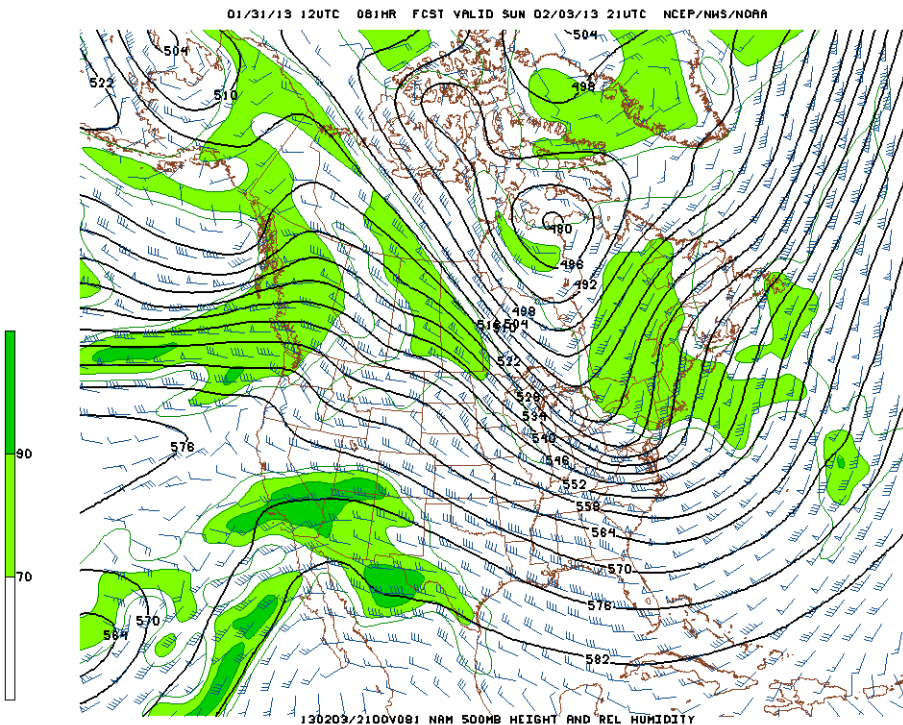
The upper level trough upwind of the ridge is forecast to elongate



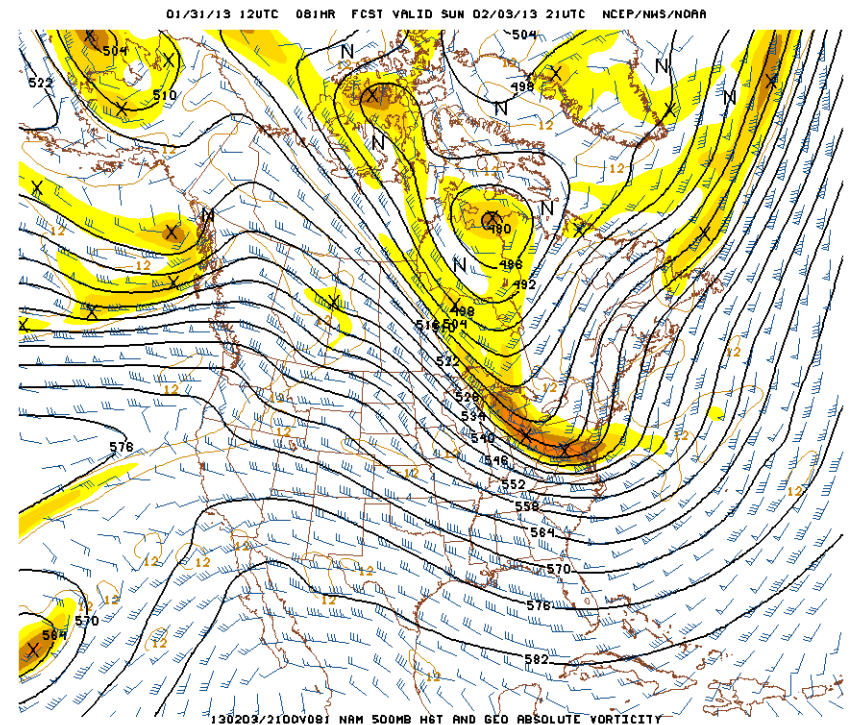
Sunday:

The upper level trough splits. The northern wave weakens the ridge and the southern portion closes off and forms a cutoff low.

500 mb NAM Sunday 1 PM



500 mb NAM Sunday 1 PM



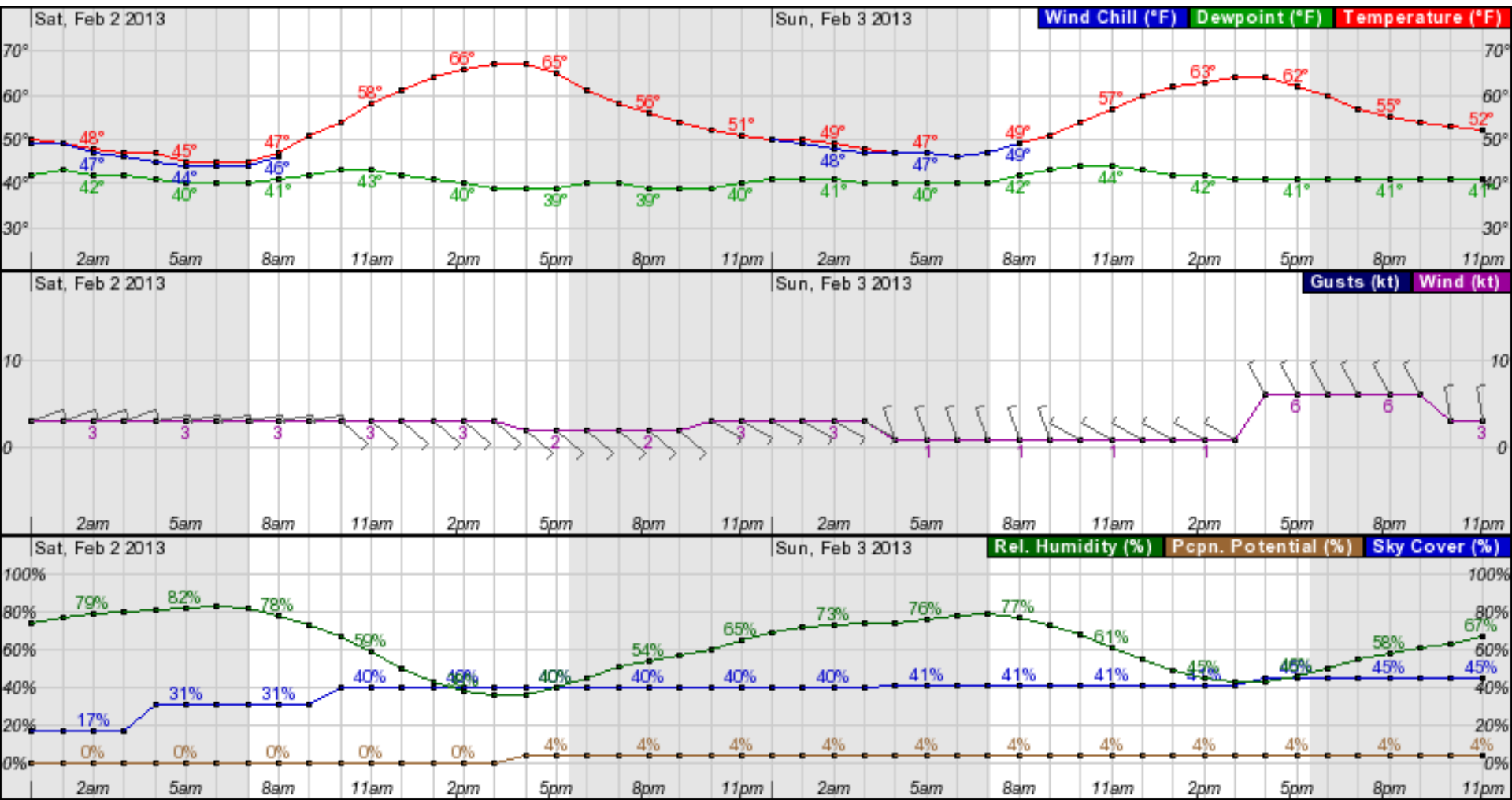
Fresno

Saturday: Increasing cloud cover (< 50%)

Sunday: Increasing cloud cover (< 50%)

Saturday →

Sunday →

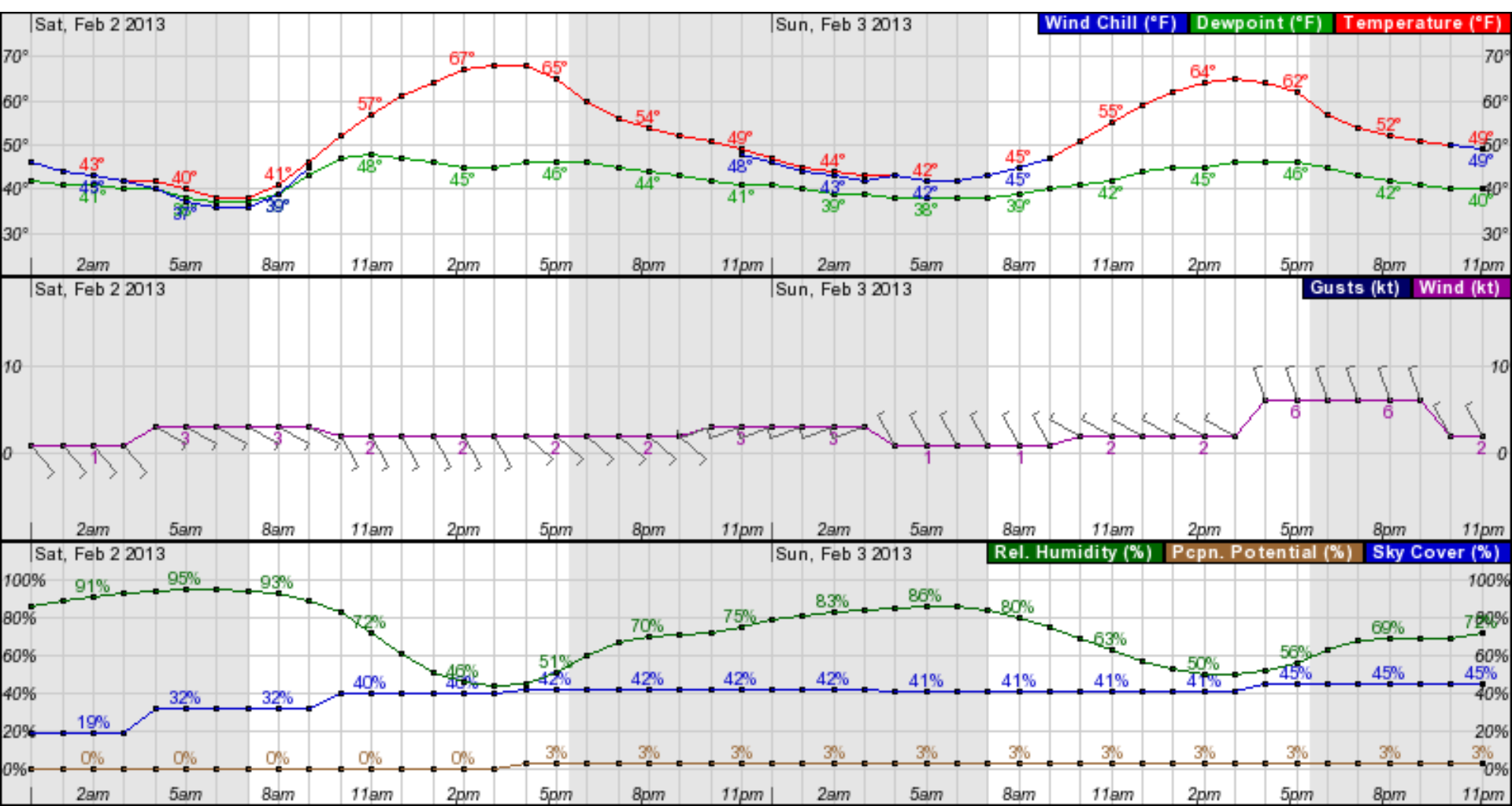


Hanford

Saturday: Increasing cloud cover (< 50%)

Sunday: Increasing cloud cover (< 50%)

Saturday → Sunday →



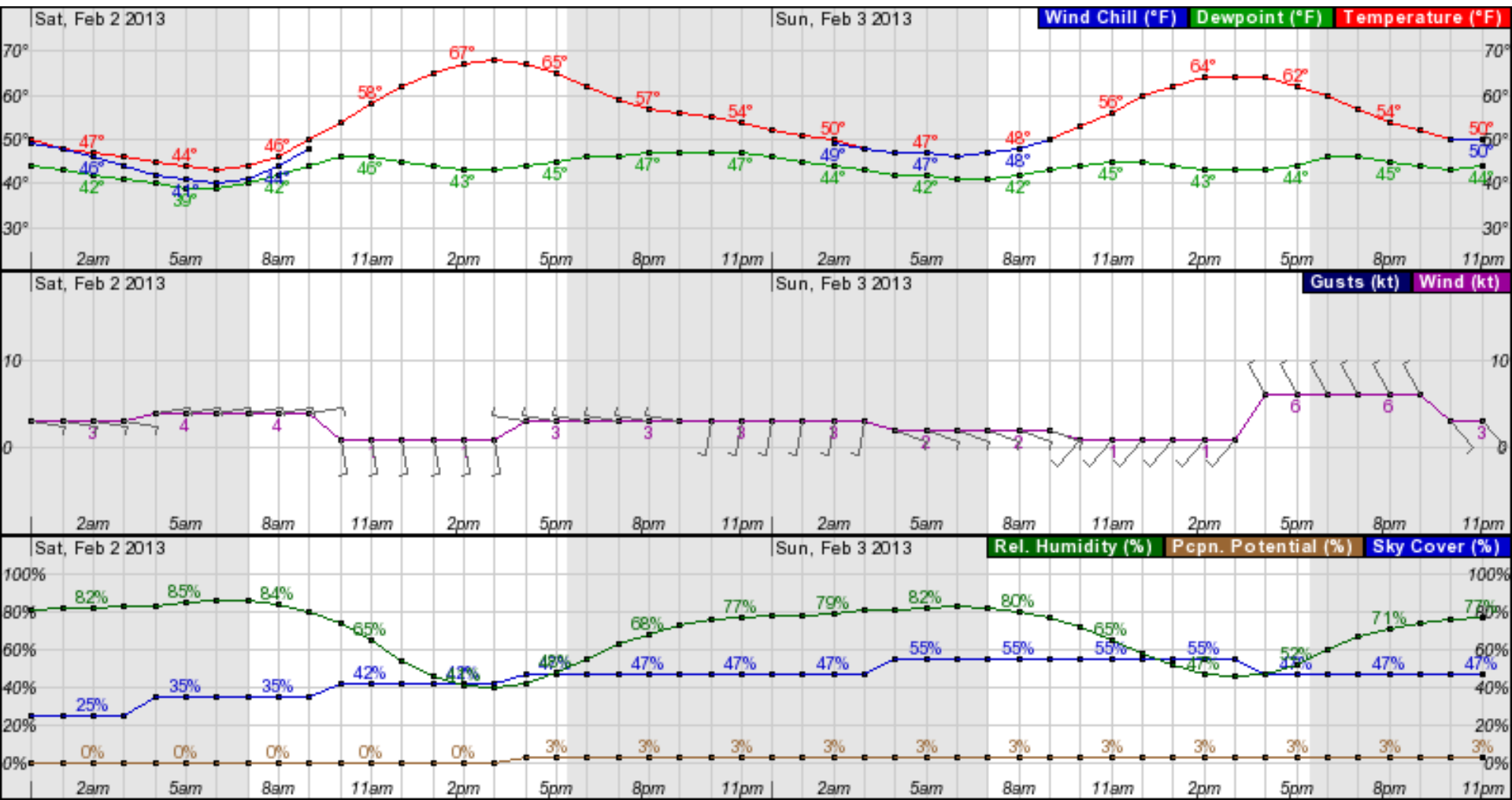
Bakersfield

Saturday: Increasing cloud cover (< 50%)

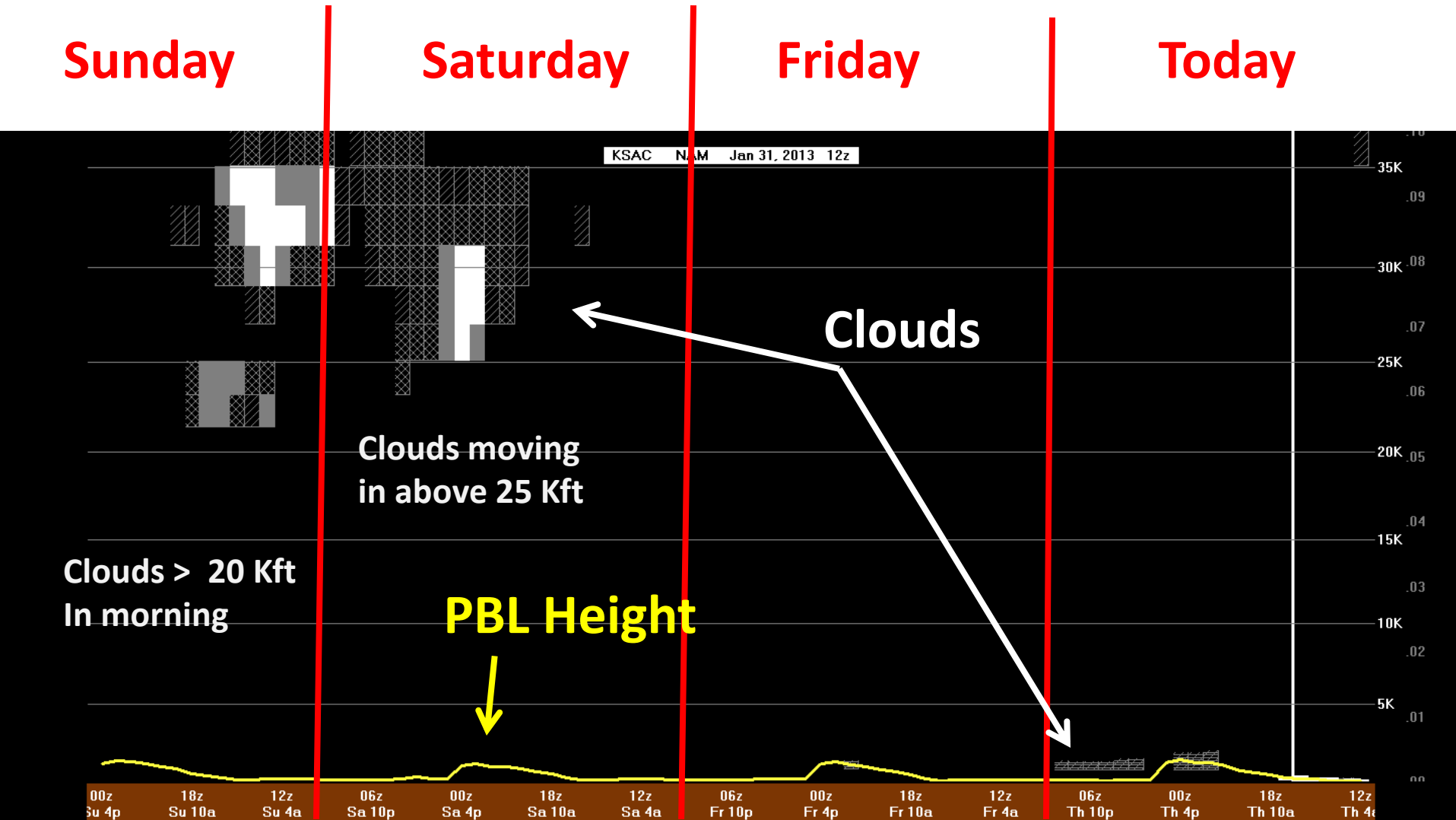
Sunday: Increasing cloud cover (> 50%)

Saturday →

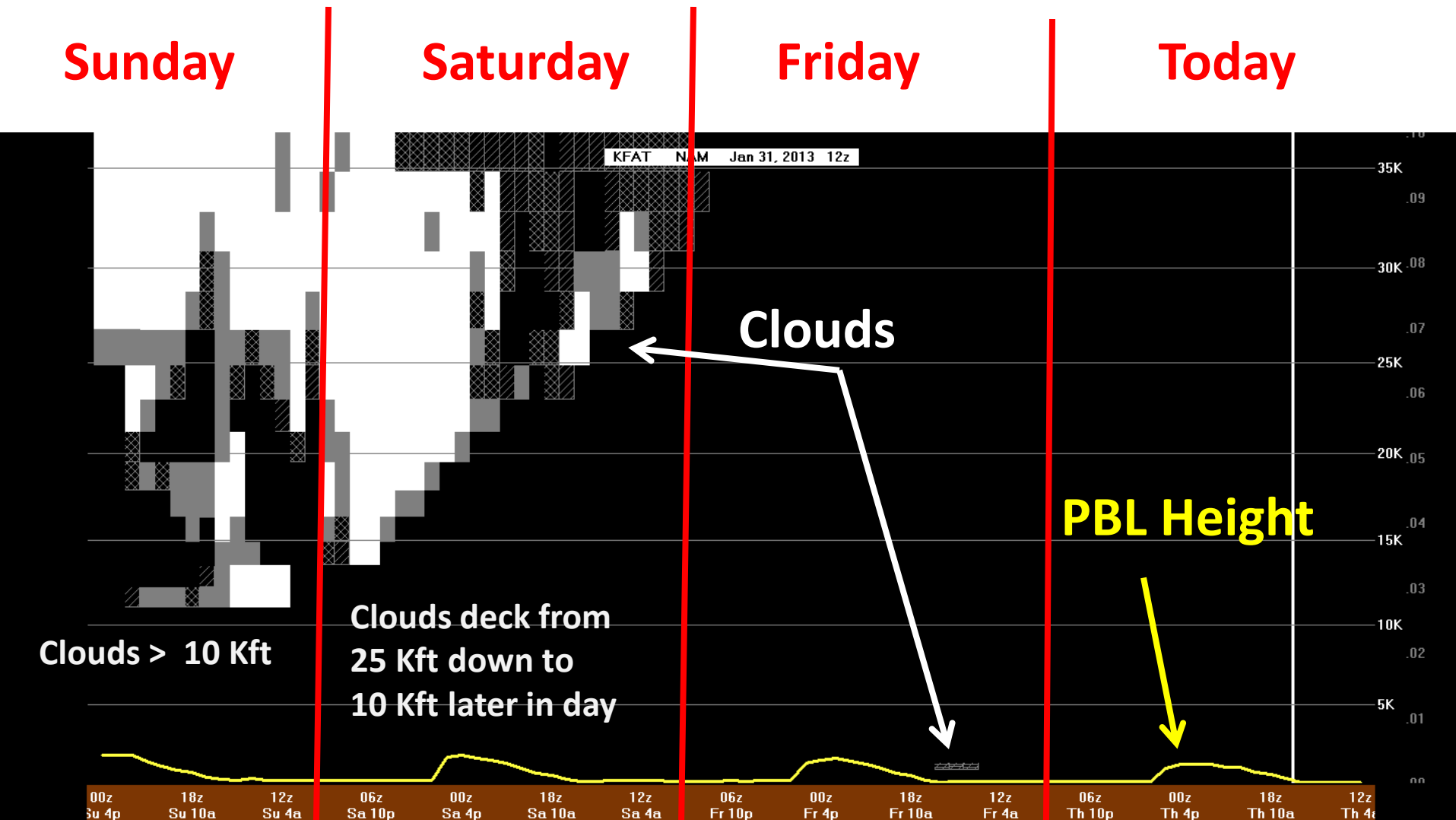
Sunday →



Sacramento : BUFKIT NAM 12 UTC Thursday Jan. 31



Fresno : BUFKIT NAM 12 UTC Thursday Jan. 31



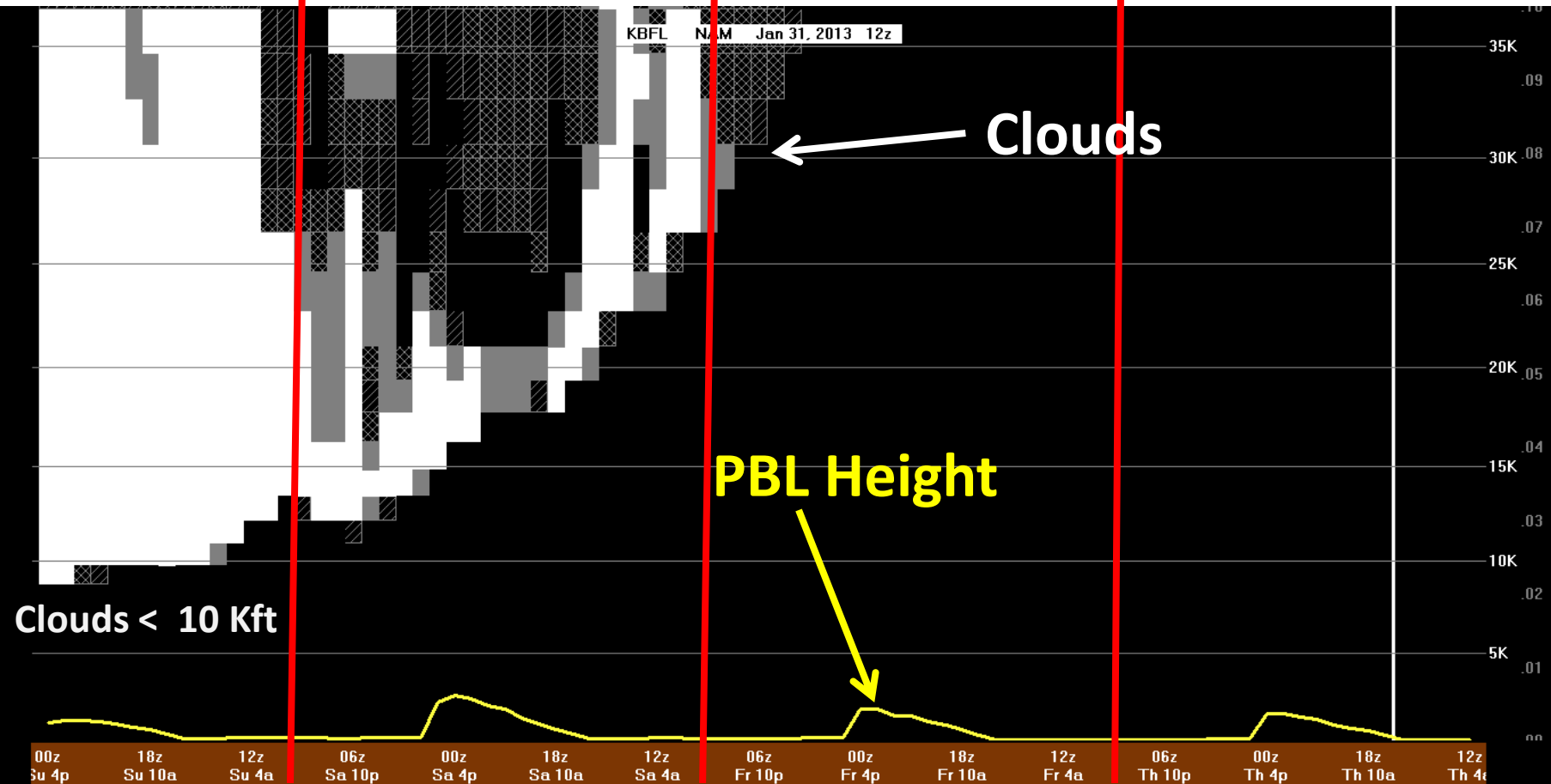
Bakersfield : BUFKIT NAM 12 UTC Thursday Jan. 31

Sunday

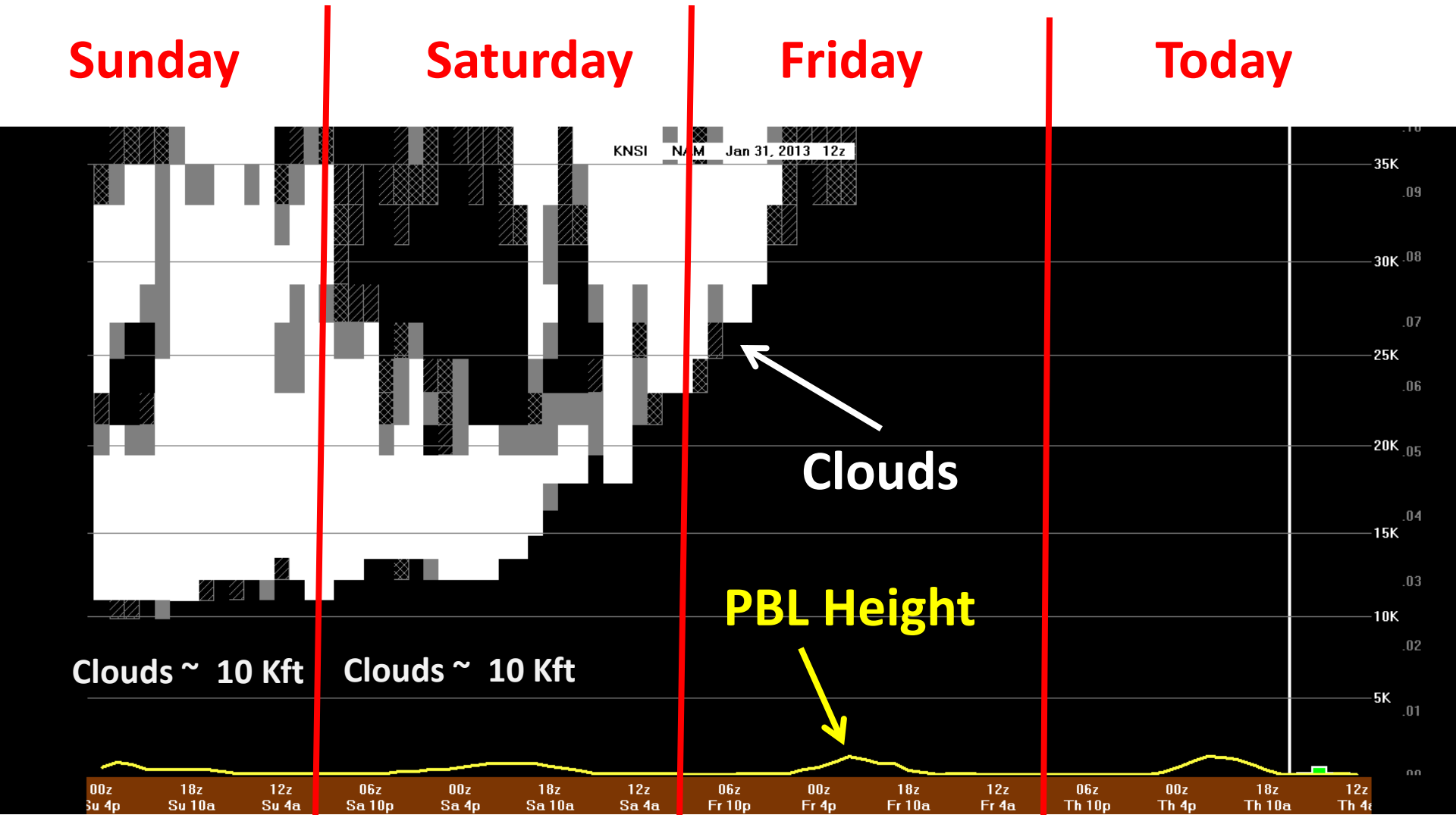
Saturday

Friday

Today



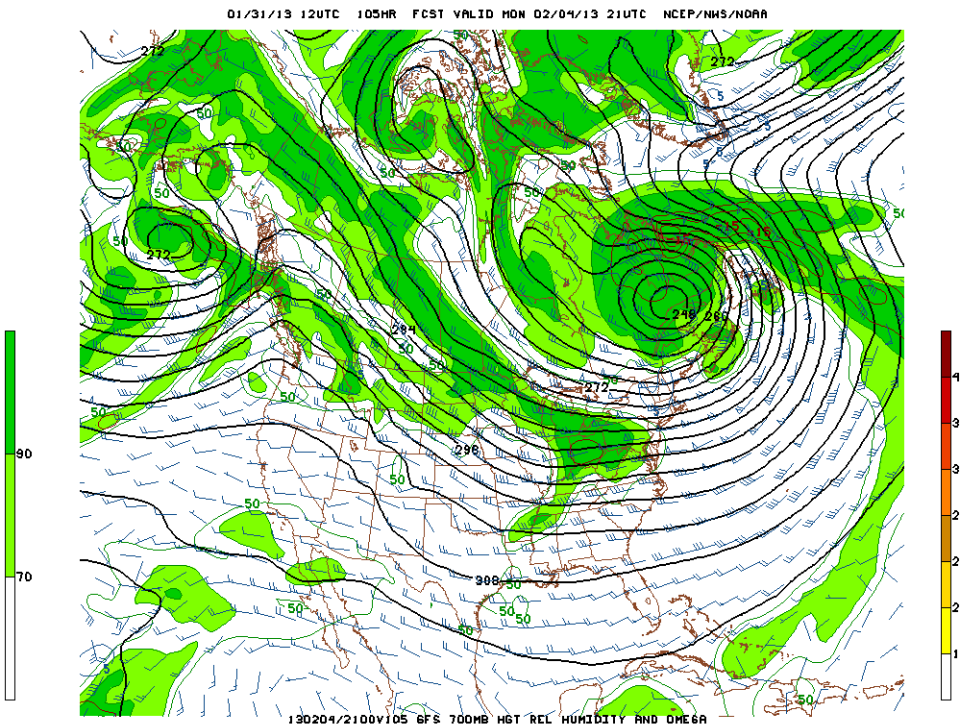
San Nicolas : BUFKIT NAM 12 UTC Thursday Jan. 31



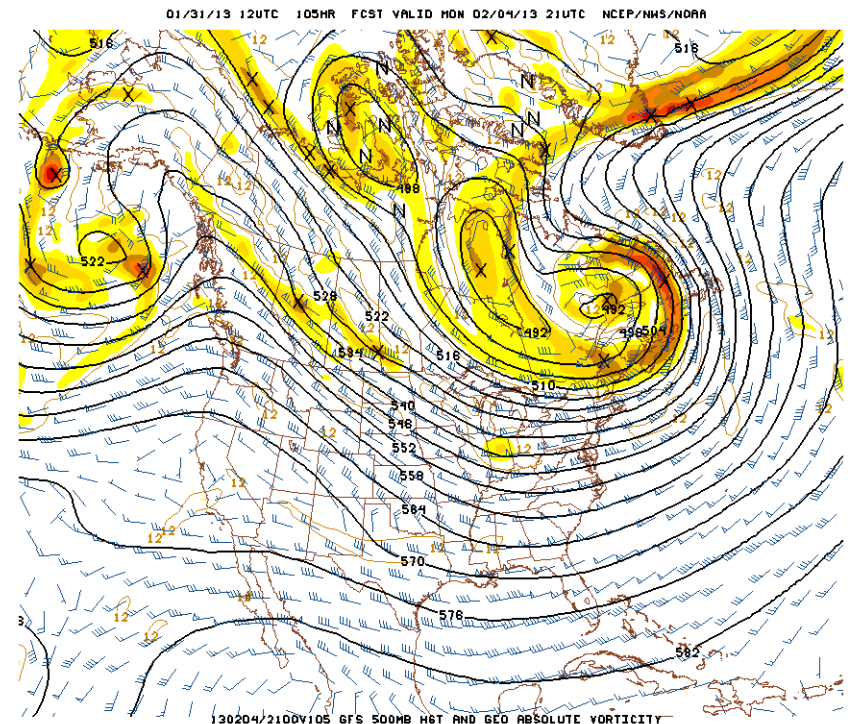
Monday:

Weakened ridge remains over our area. Upper level low enters the Gulf of Alaska

500 mb GFS Monday 1 PM



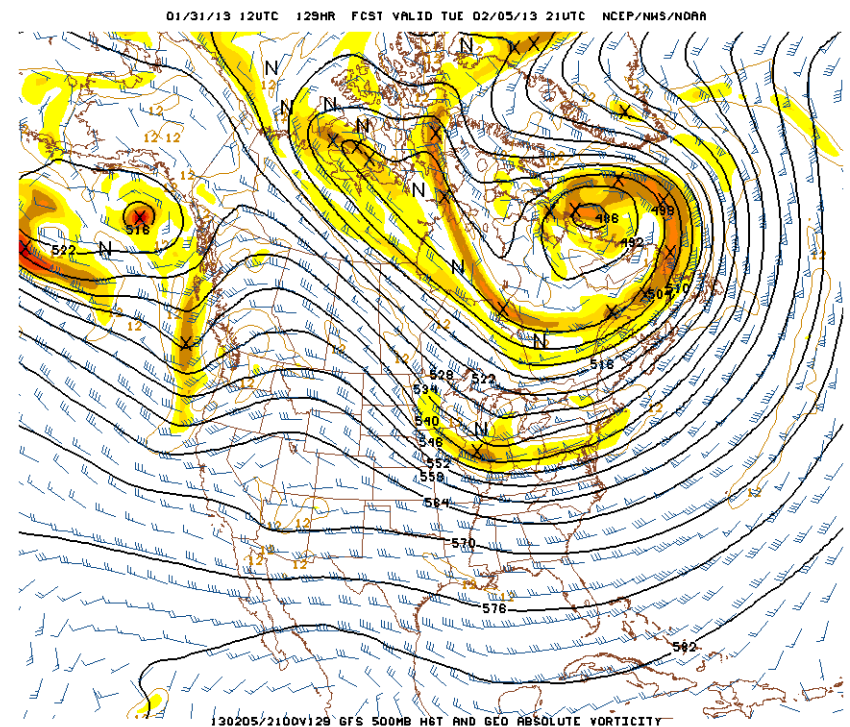
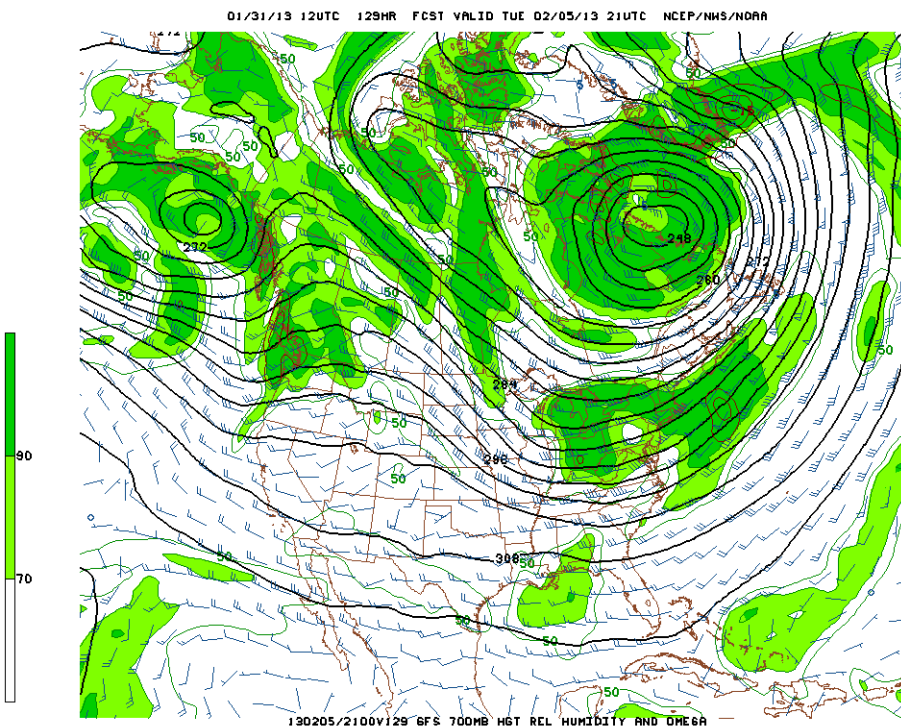
500 mb GFS Monday 1 PM



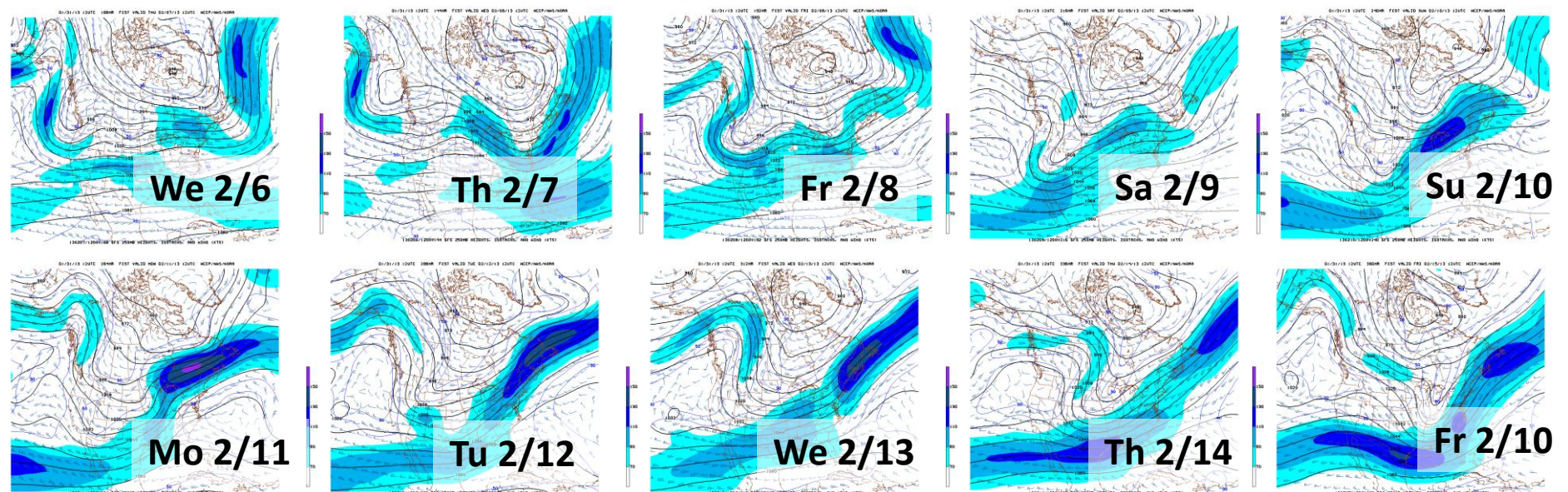
Tuesday - Thursday:

Short wave around the low moves into the Pacific NW. The GFS and ECMWF don't show much precipitation associated with this disturbance.

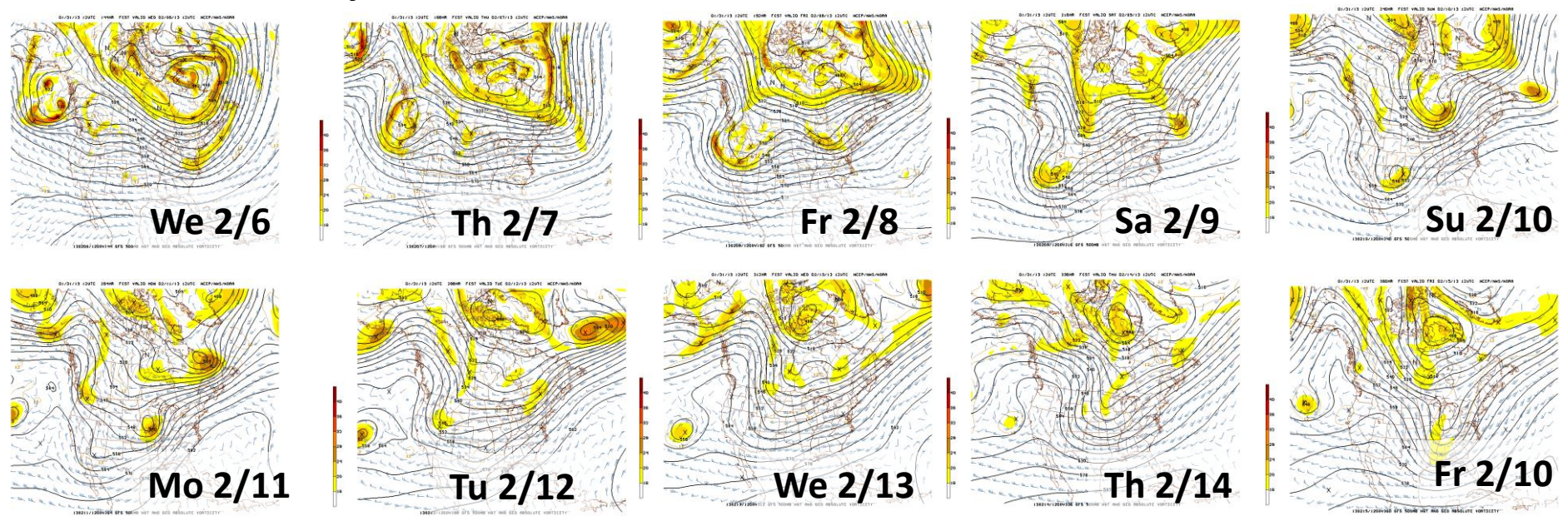
The low is forecast to drop south Wed night, bringing the main trough through CA next Thursday. Both models currently show heaviest precipitation over the northern SJV on Thursday although uncertainty is an issue that far out.



GFS - 250 mb winds - Extended forecast



GFS - 500 mb vorticity - Extended forecast

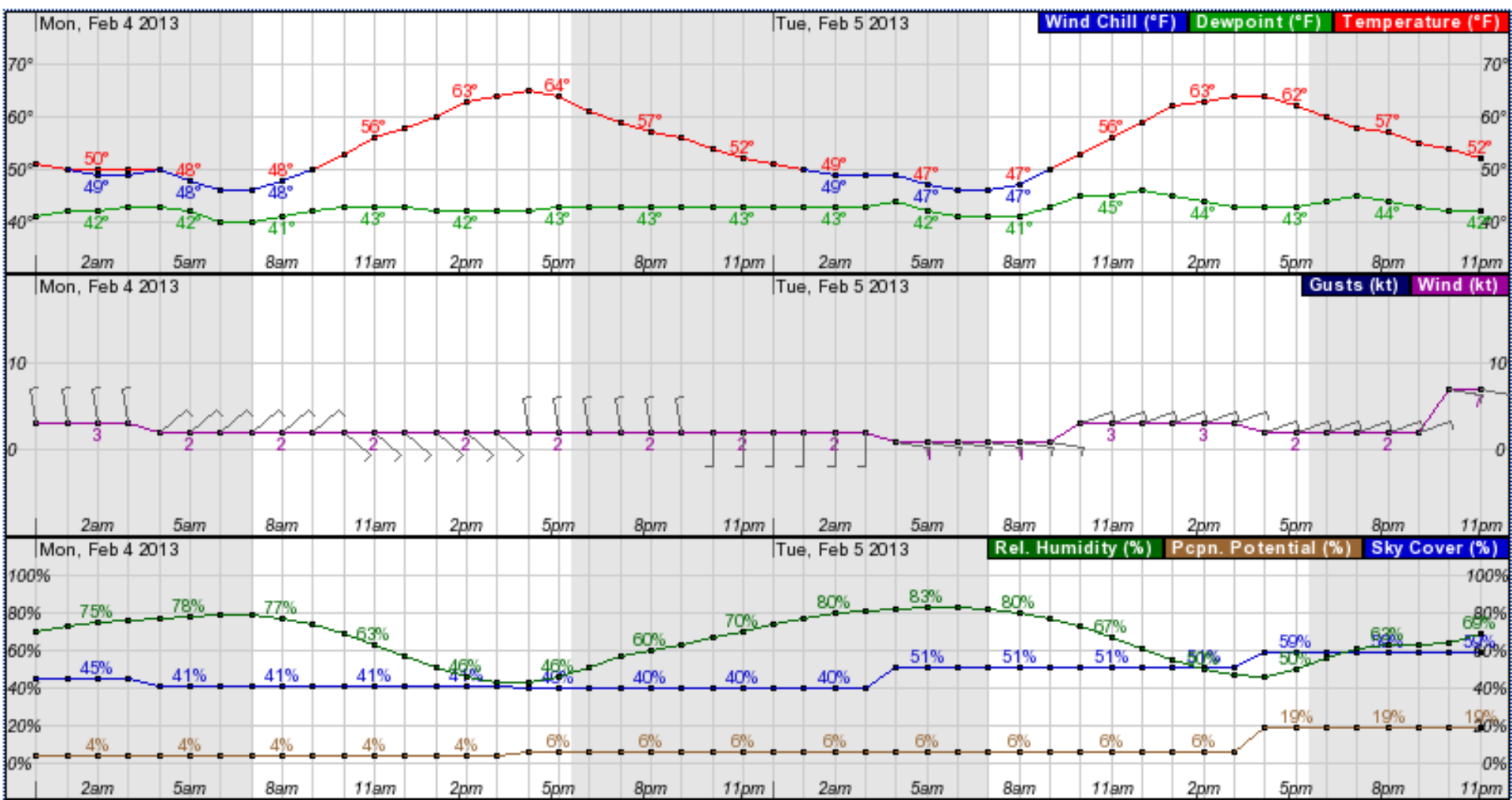


Fresno

Monday: Increased cloud cover (< 50%)

Tuesday: Increased cloud cover (> 50%)

Monday → Tuesday →



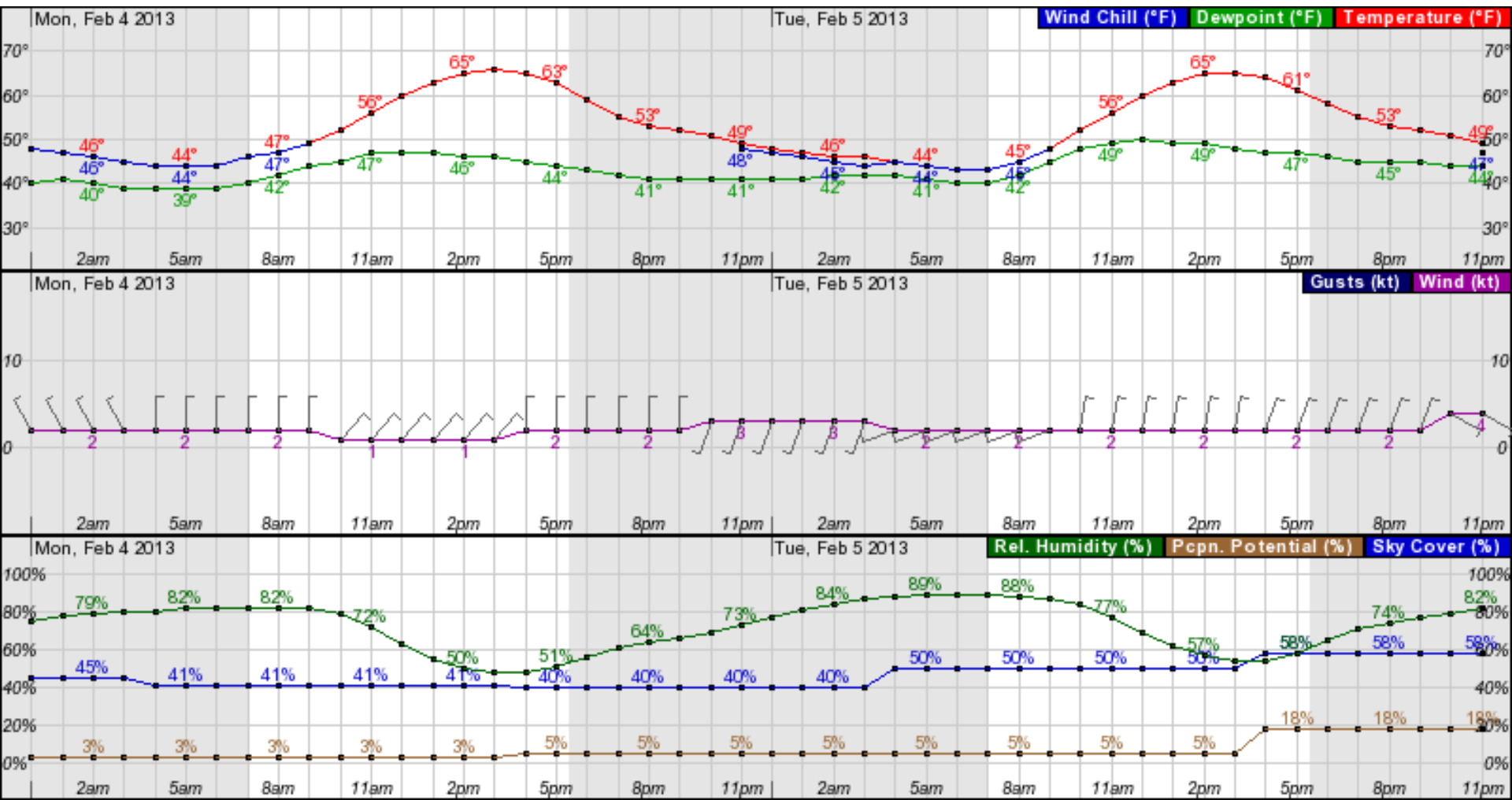
Hanford

Monday: Increased cloud cover (< 50%)

Tuesday: Increased cloud cover (> 50%)

Monday →

Tuesday →



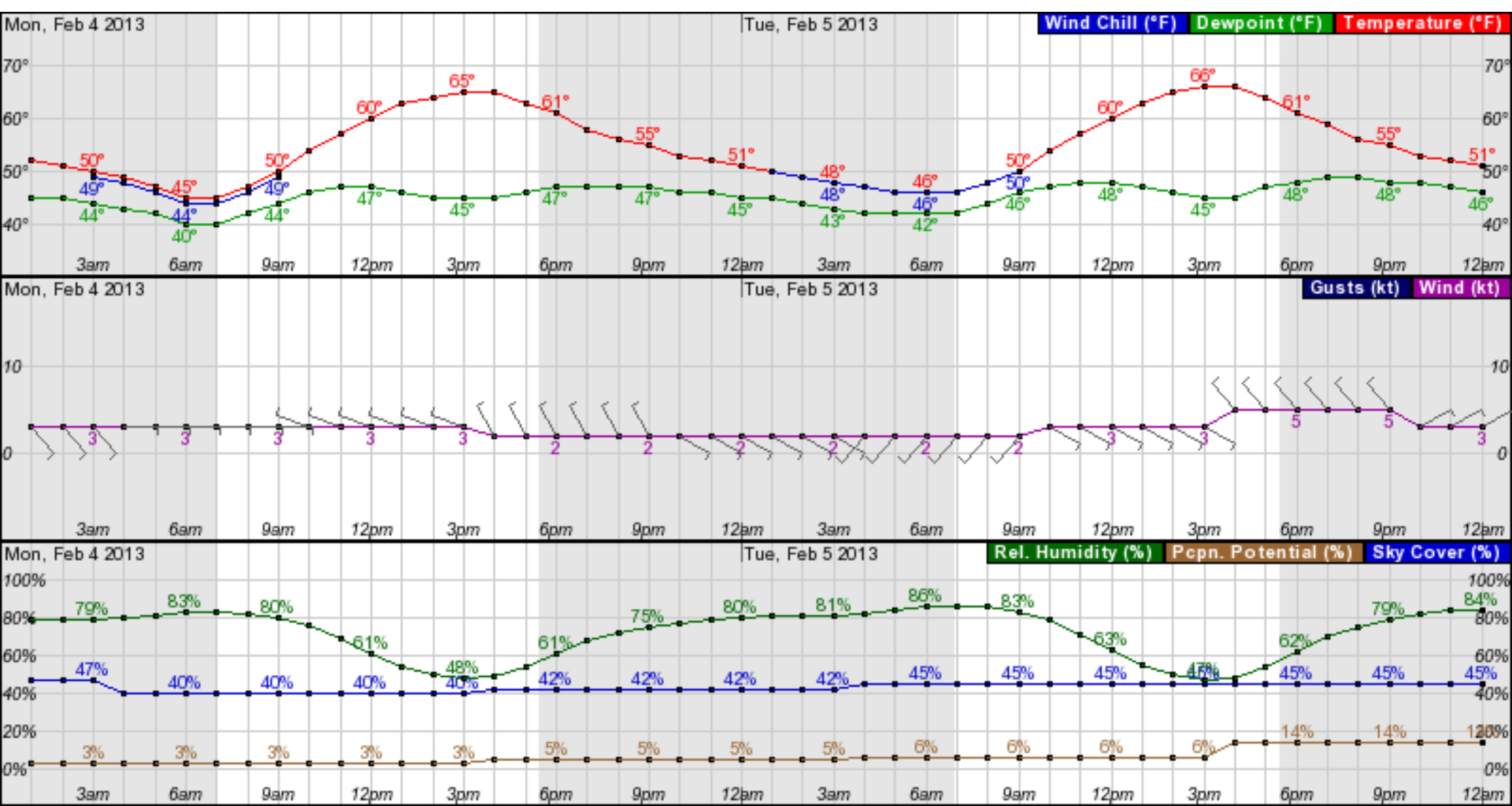
Bakersfield

Monday: Increased cloud cover (< 50%)

Tuesday: Increased cloud cover (< 50%)

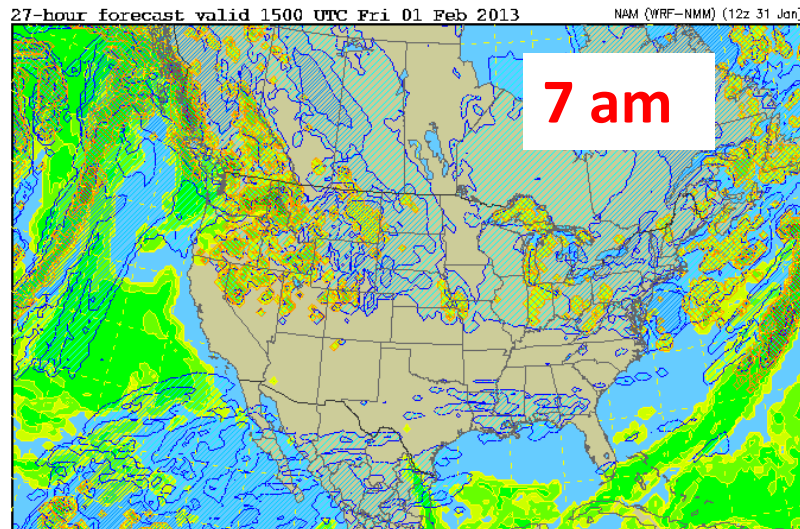
Monday →

Tuesday →

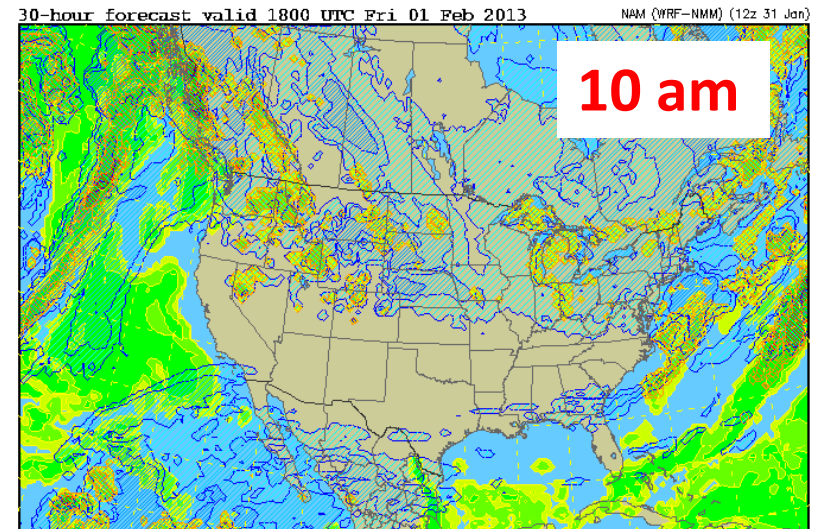


Tomorrow: NAM – High level clouds over PODEX LA region by 10 am, over the SJV around 1 pm. NAM forecasting low level clouds near PODEX coastal legs.

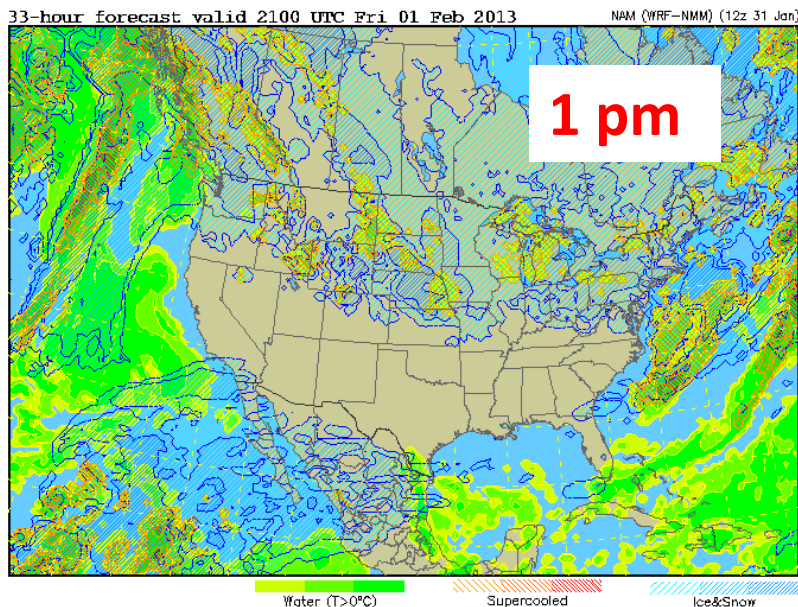
Integrated liquid and frozen hydrometeors (all levels)



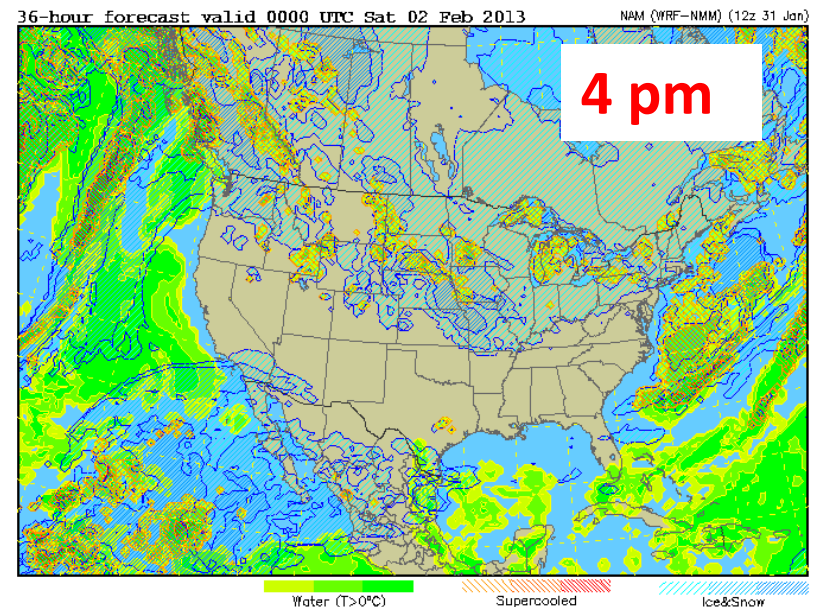
Integrated liquid and frozen hydrometeors (all levels)



Integrated liquid and frozen hydrometeors (all levels)



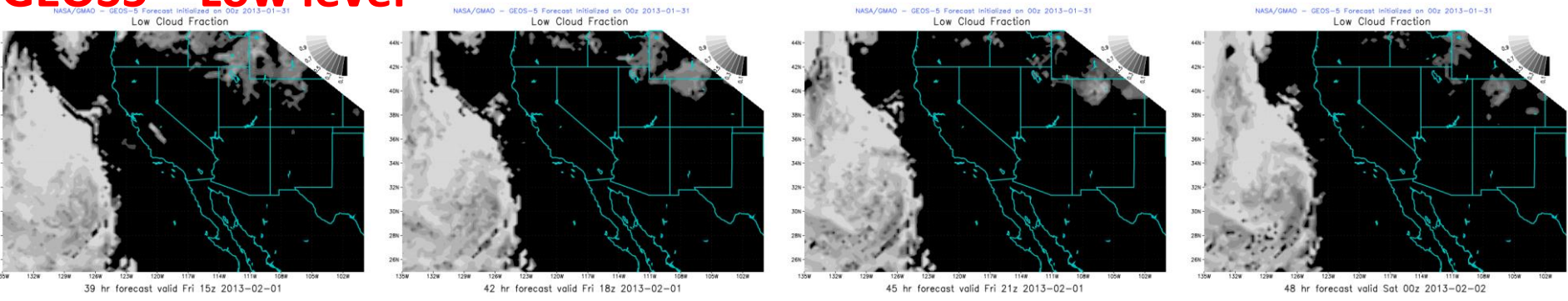
Integrated liquid and frozen hydrometeors (all levels)



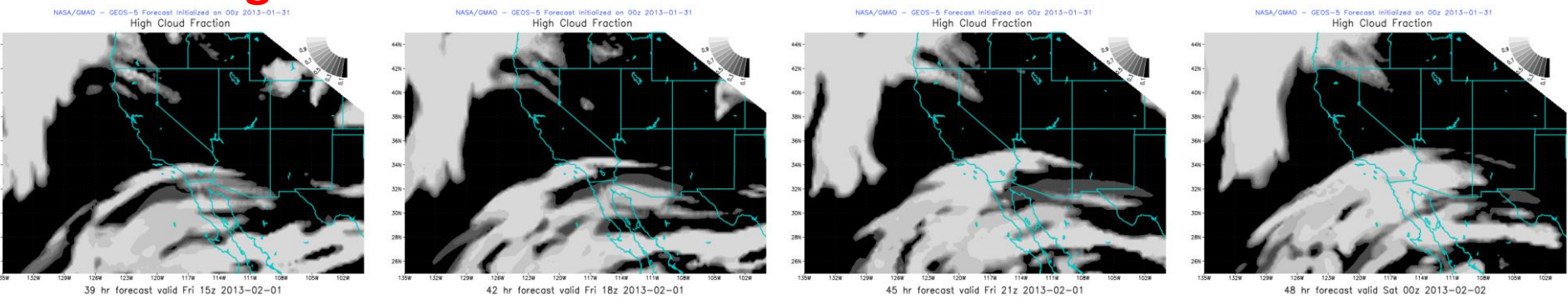
Tomorrow: GEOS5 – Morning fog in the SJV, low level clouds far off coast. High level clouds over the PODEX region all day approaching the SJV region by 1 pm.

7 am 10 am 1 pm 4 pm

GEOS5 – Low level



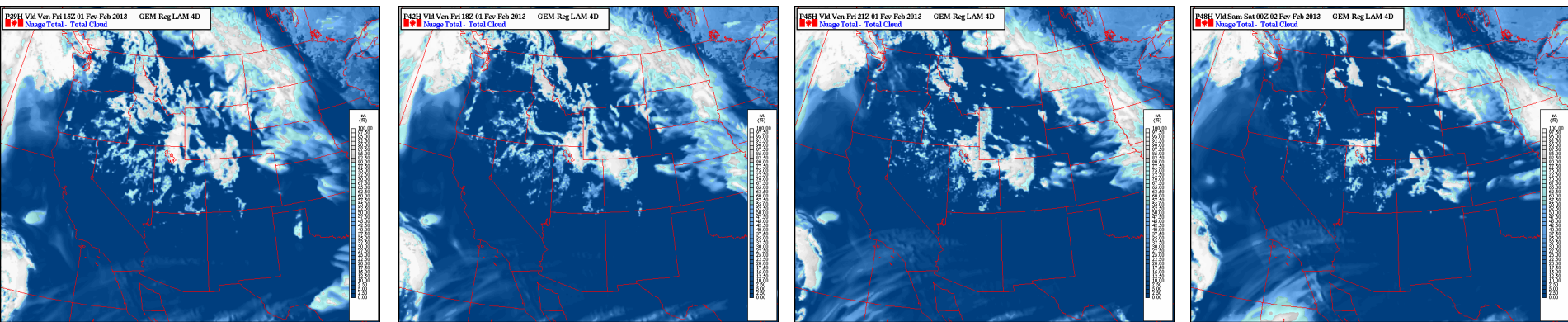
GEOS5 – High level



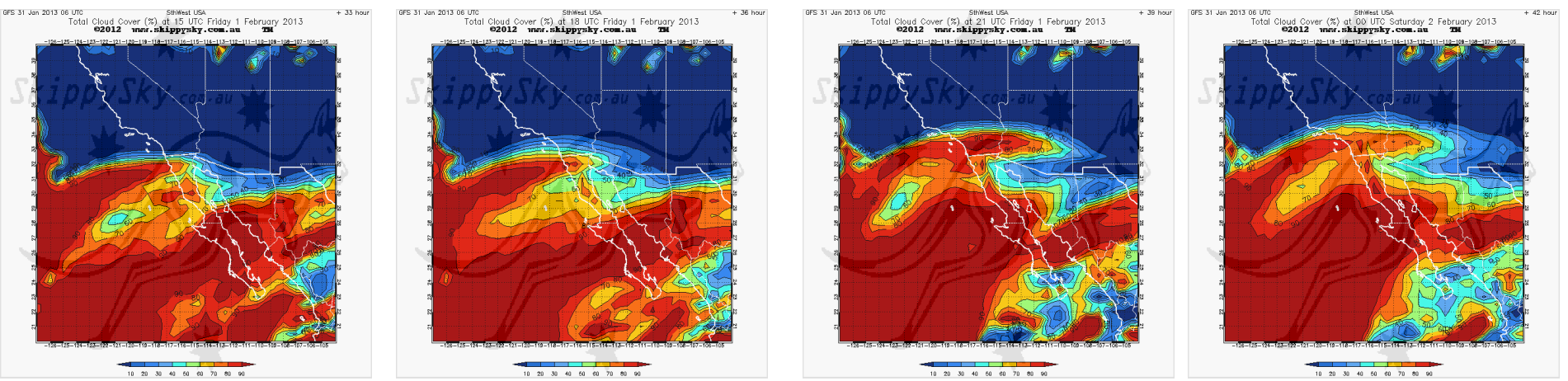
Tomorrow: Canadian – looks like thin, high clouds approaching from the south. Over PODEX region by 10 am and SJV by 1 pm; GFS – Same as Canadian model.

7 am 10 am 1 pm 4 pm

Canadian

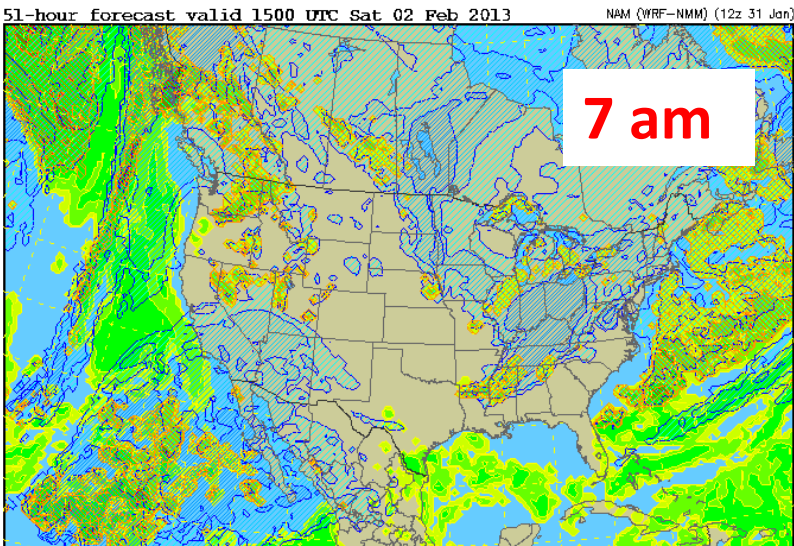


GFS – Total Cloud



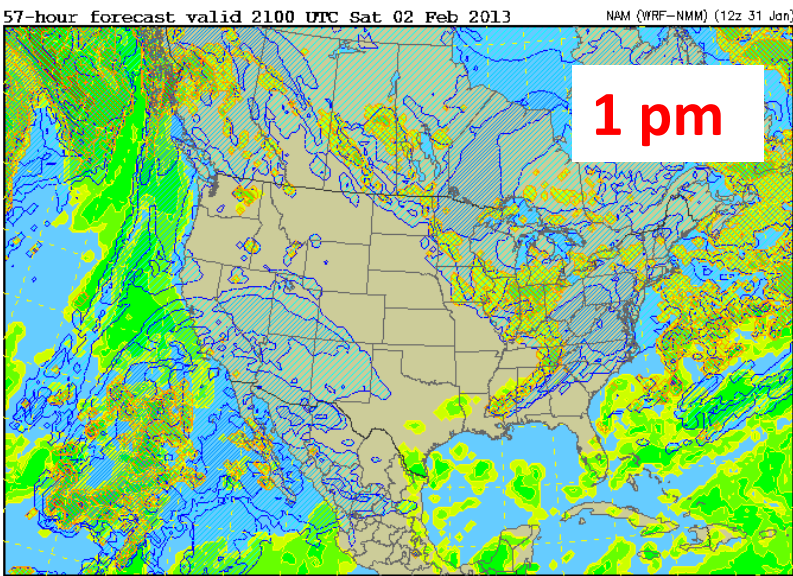
Saturday: NAM – High level clouds all day

Integrated liquid and frozen hydrometeors (all levels)

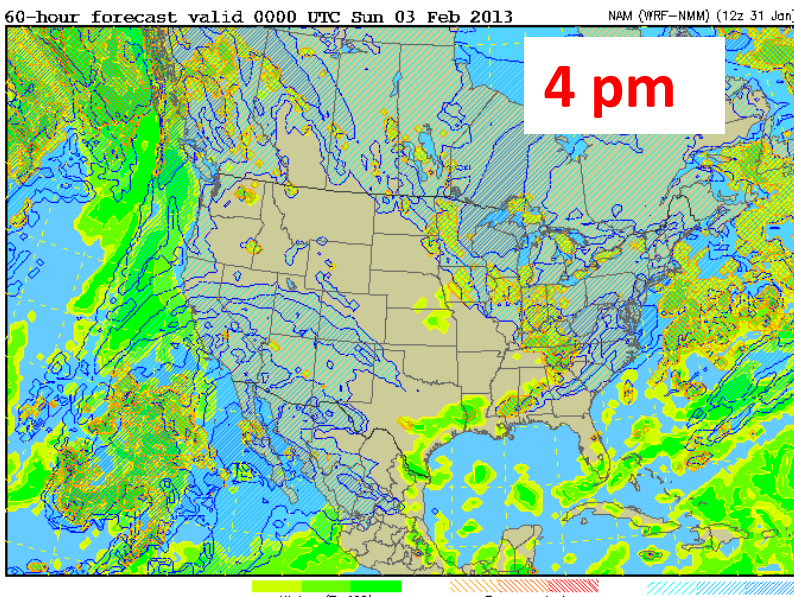


10 am

Integrated liquid and frozen hydrometeors (all levels)



Integrated liquid and frozen hydrometeors (all levels)



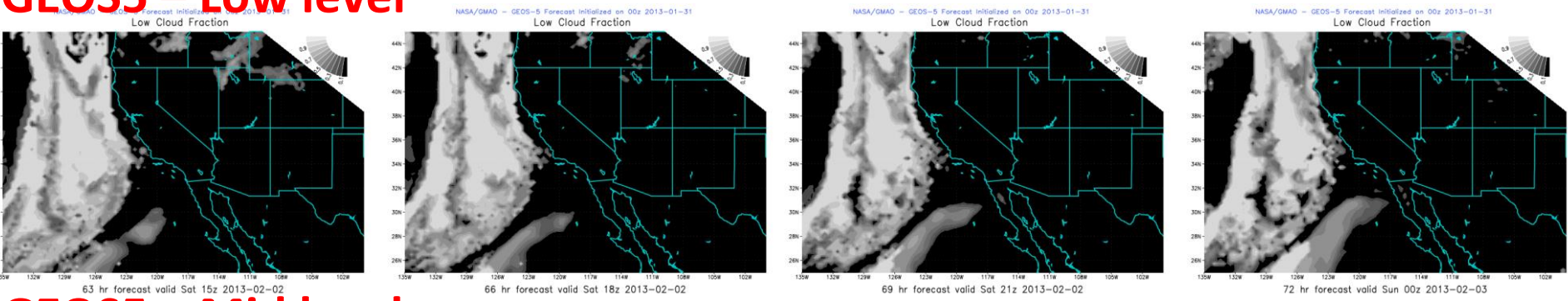
Water (T>0°C) Supercooled Ice&Snow

Water (T>0°C) Supercooled Ice&Snow

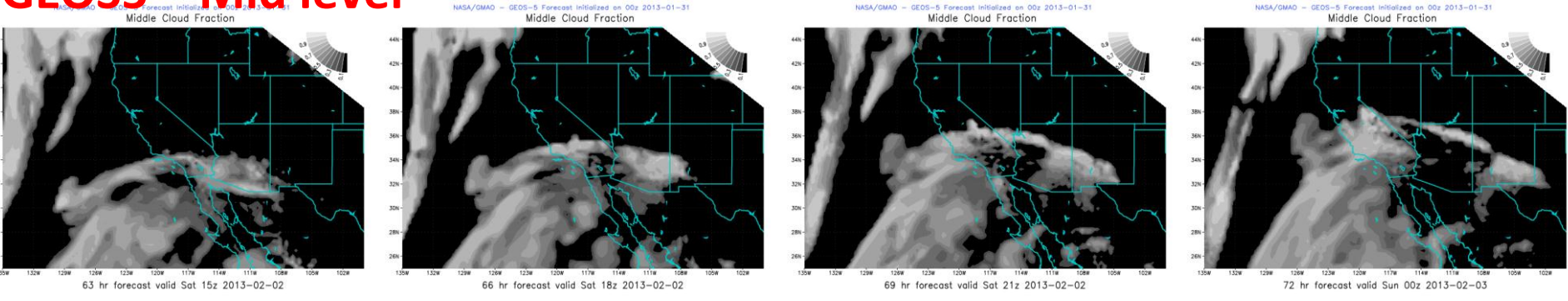
Saturday: GEOS5 – high level clouds all day, mid level clouds over PODEX region, approaching the SJV by 10 am.

7 am 10 am 1 pm 4 pm

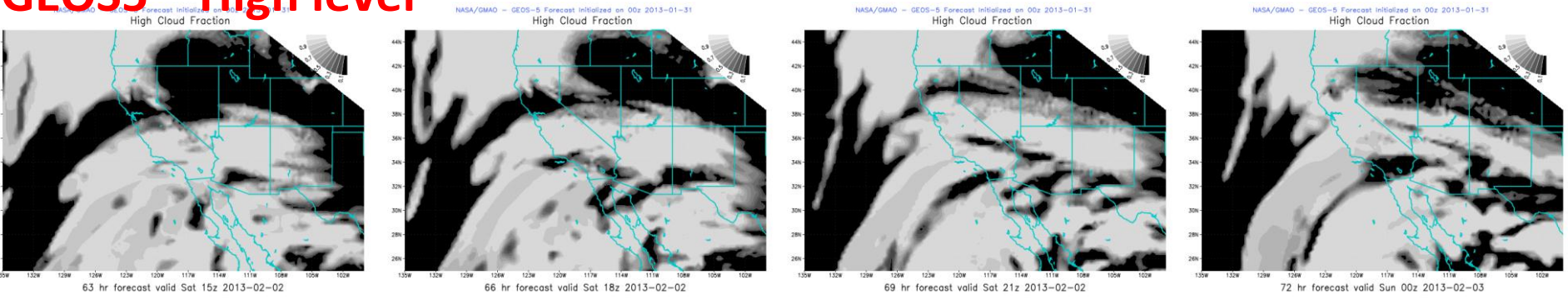
GEOS5 – Low level



GEOS5 – Mid level

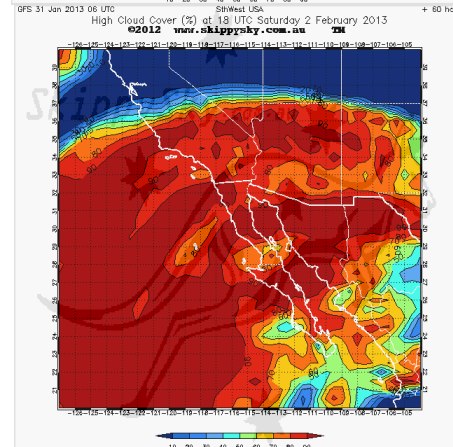
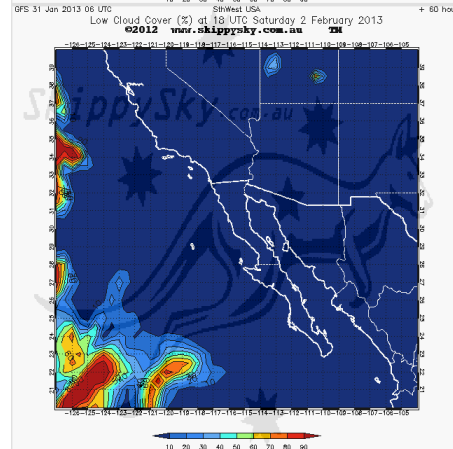
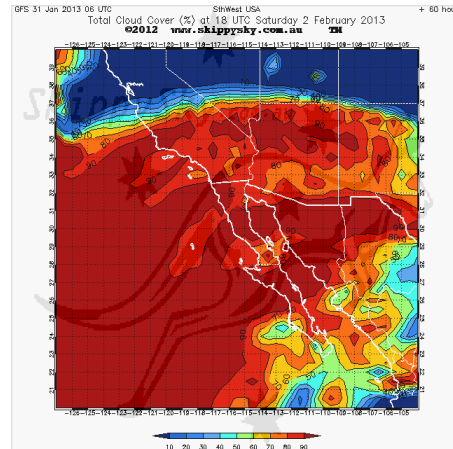


GEOS5 – High level



Saturday: GFS –
high level cloud
cover over entire
region

10 am

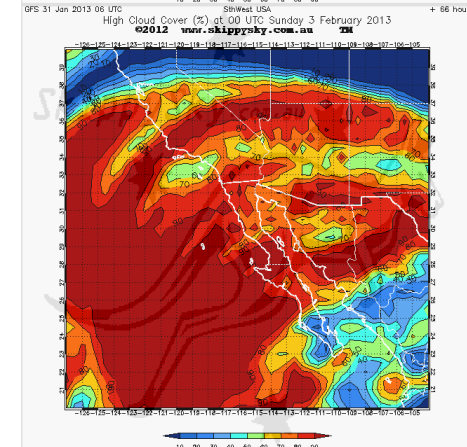
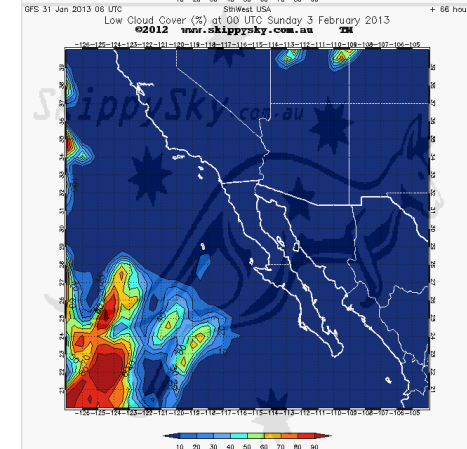
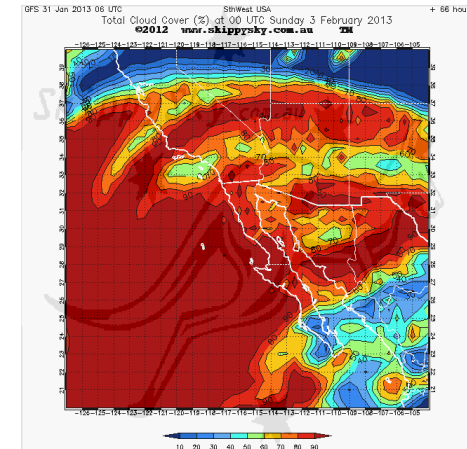


**GFS
Total Cloud**

**GFS
Low level**

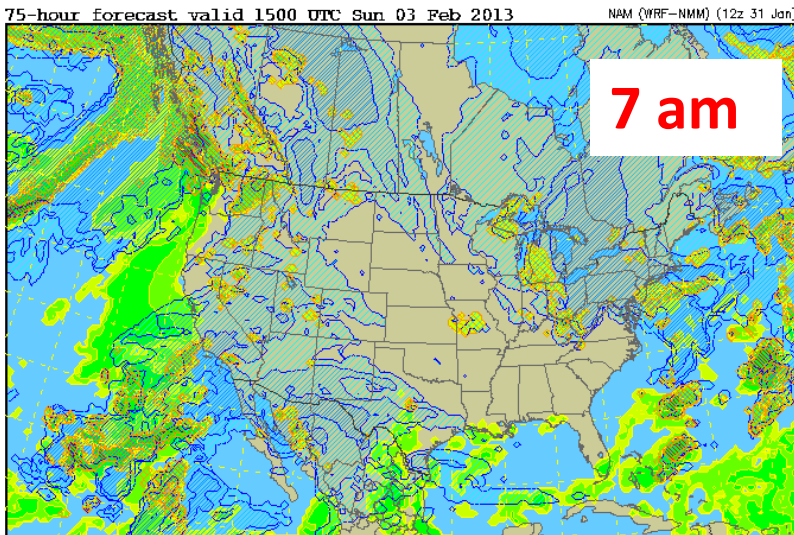
**GFS
High level**

4 pm

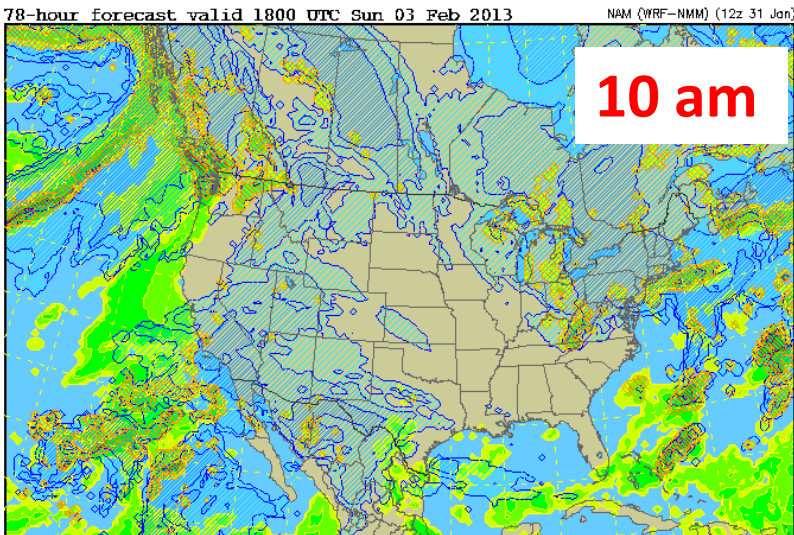


Sunday: NAM – Clouds from 6 Kft and high forecast for the SJV and PODEX LA region all day

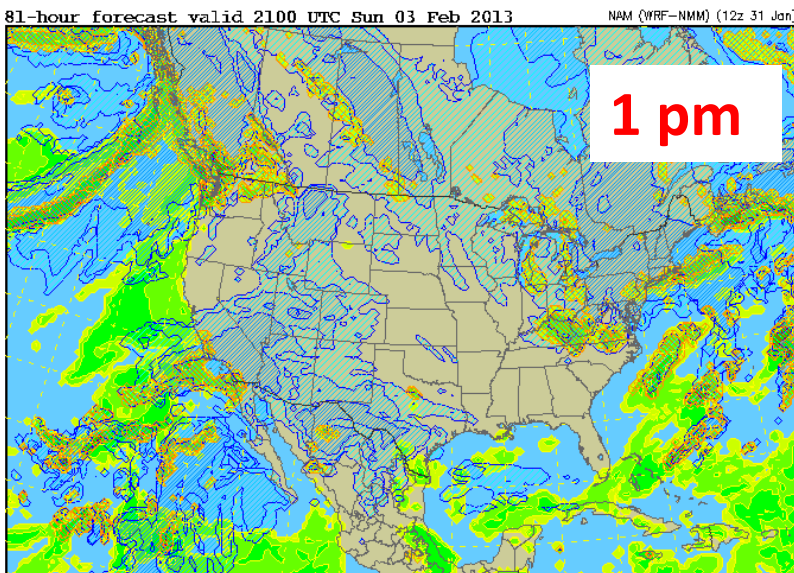
Integrated liquid and frozen hydrometeors (all levels)



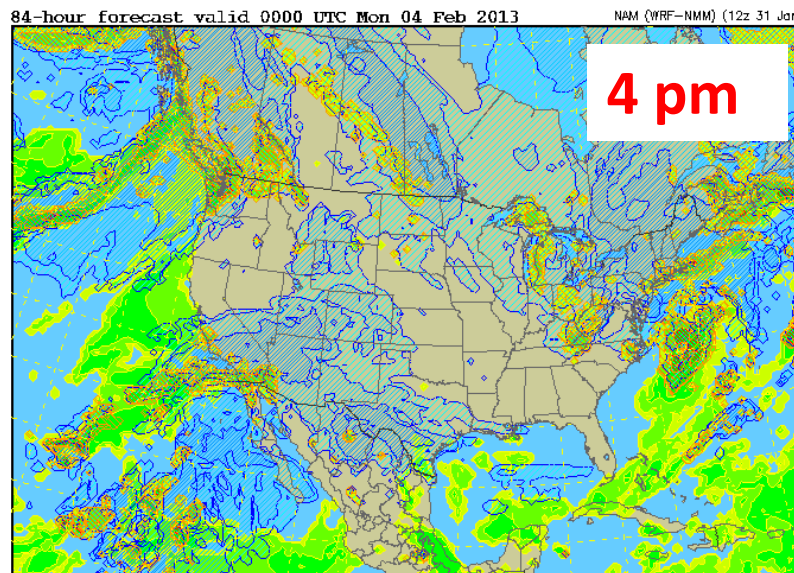
Integrated liquid and frozen hydrometeors (all levels)



Integrated liquid and frozen hydrometeors (all levels)



Integrated liquid and frozen hydrometeors (all levels)



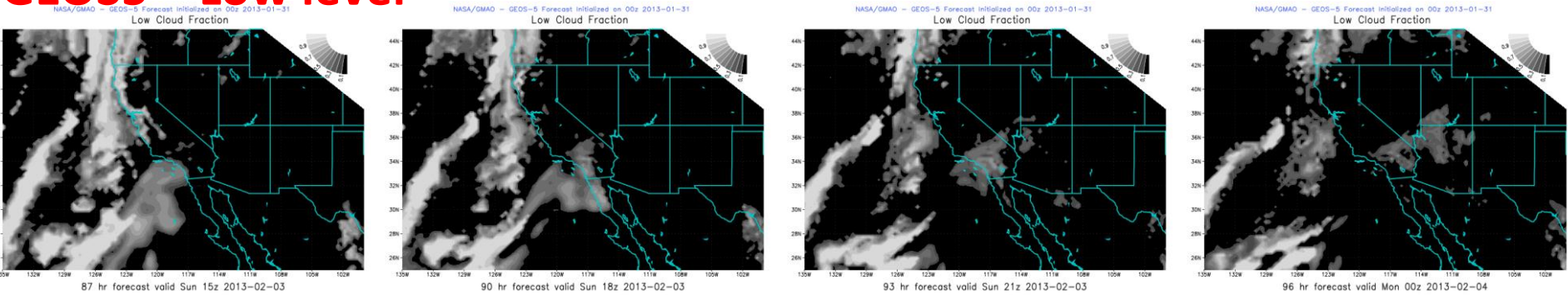
Water (T>0°C) Supercooled Ice&Snow

Water (T>0°C) Supercooled Ice&Snow

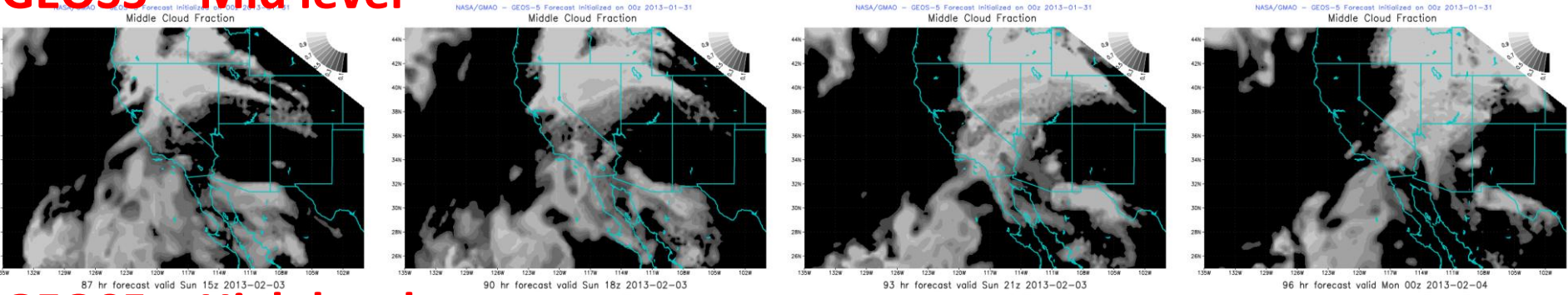
Sunday: GEOS5 – Clouds at all levels throughout the day

7 am 10 am 1 pm 4 pm

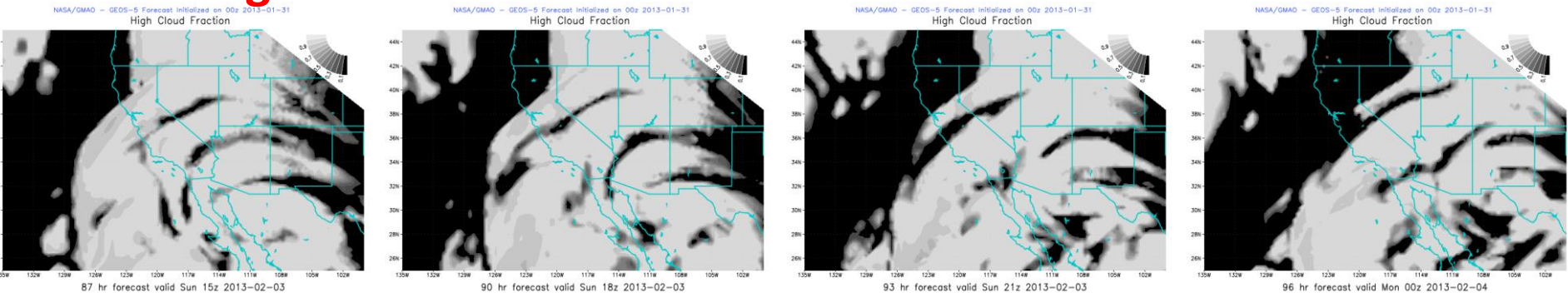
GEOS5 – Low level

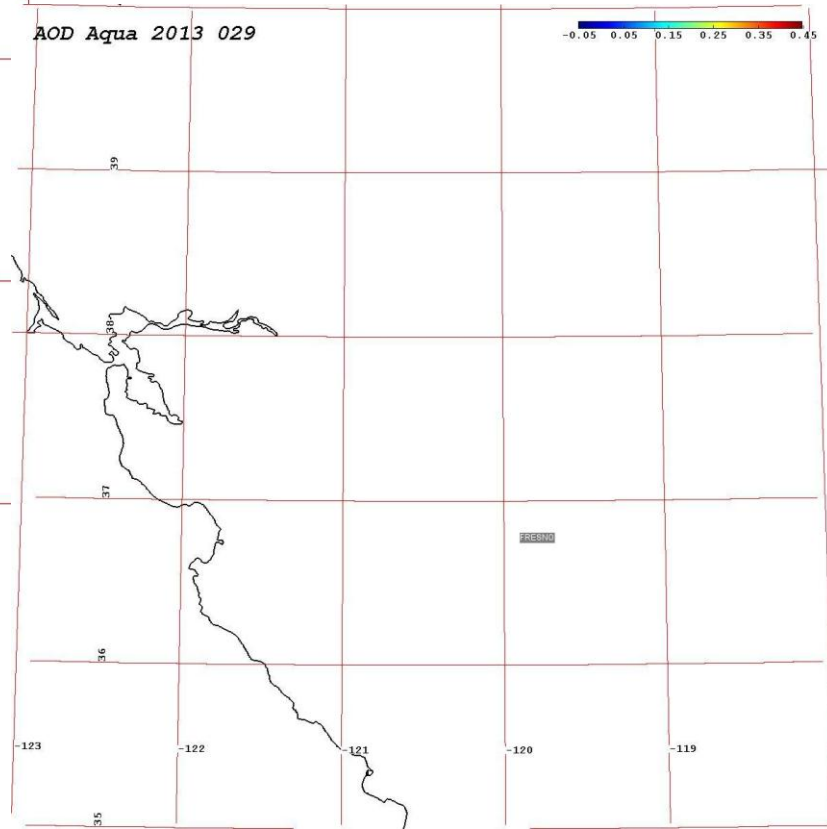
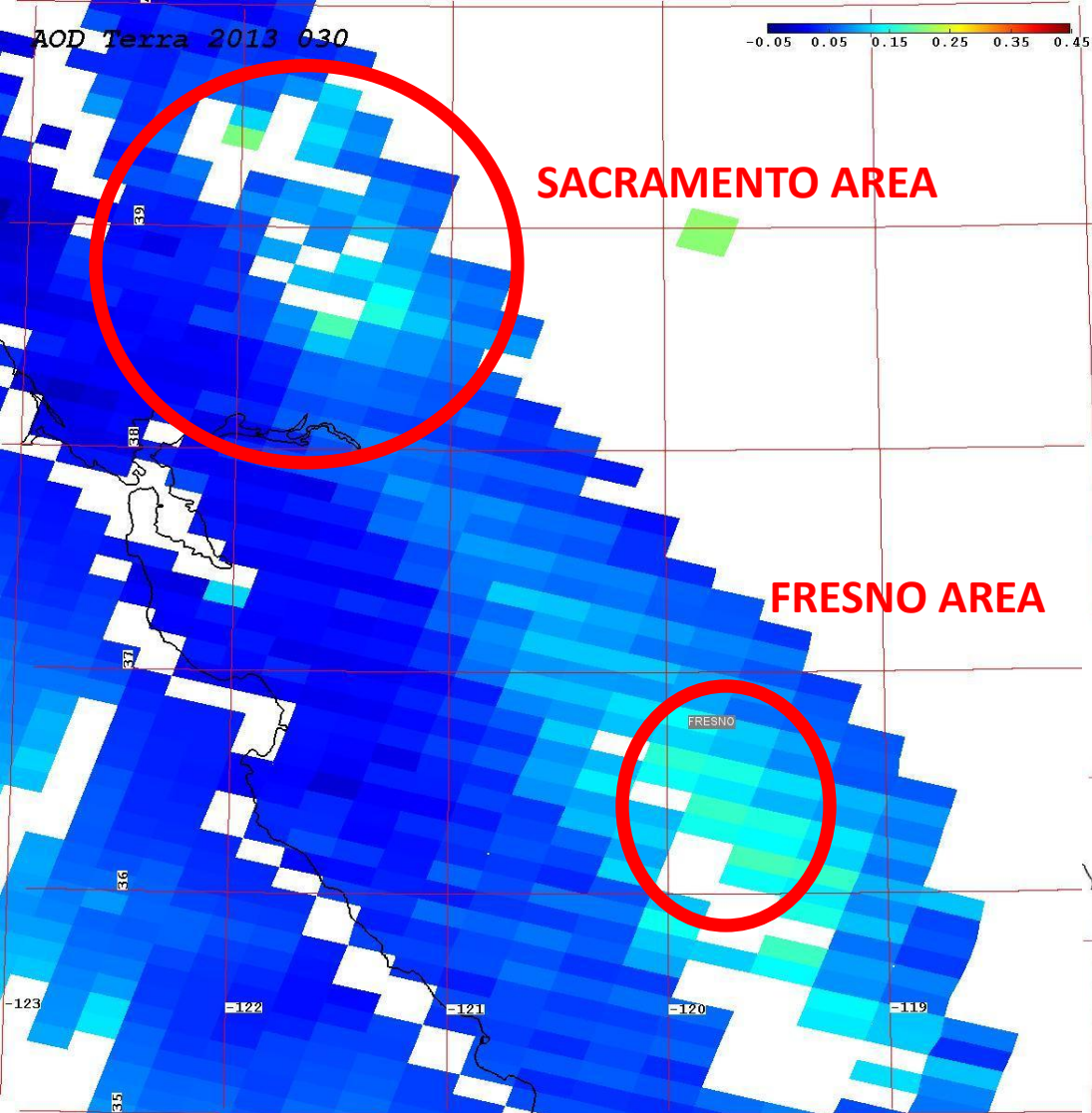


GEOS5 – Mid level

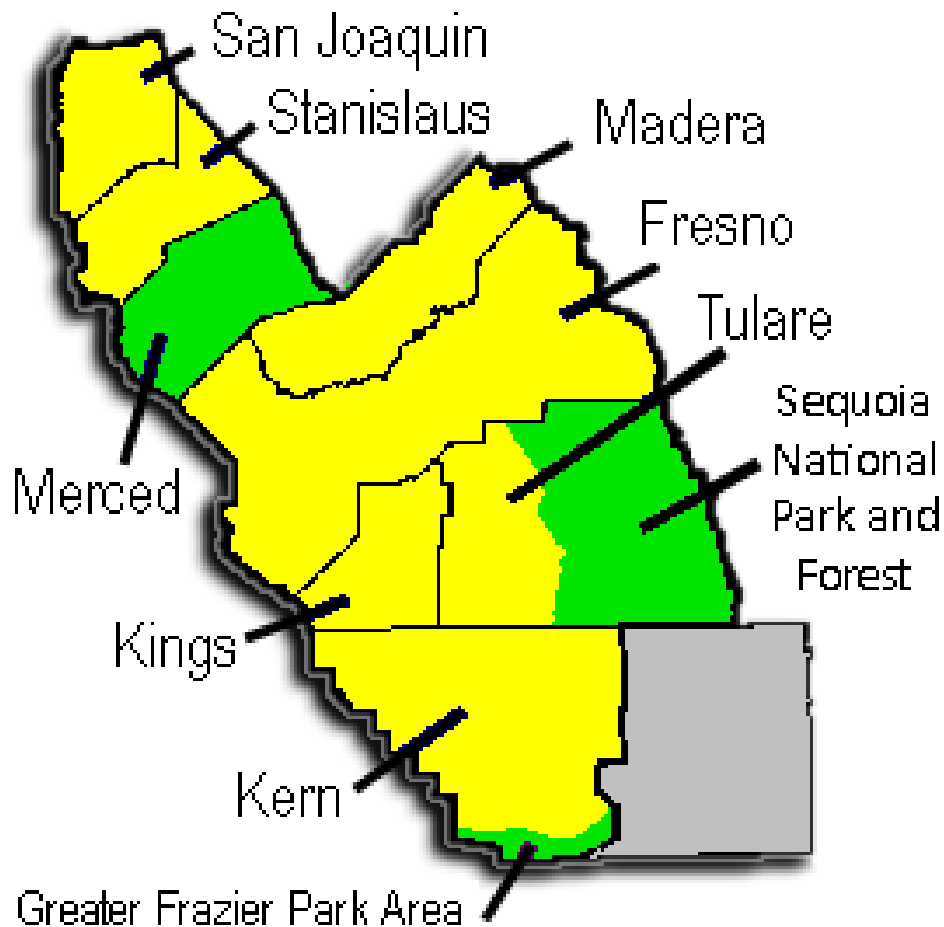


GEOS5 – High level





SJV APCD Daily Forecast – for TODAY (Jan 31)



ROAR LEVEL	Ozone (O ³)	Particulate Matter (PM 2.5)
 LEVEL 1 Good	1-59 ppb	1-15 µg/m ³
 LEVEL 2 Moderate	60-75 ppb	16-35 µg/m ³
 LEVEL 3 Unhealthy for Sensitive Groups	76-95 ppb	36-55 µg/m ³
 LEVEL 4 Unhealthy	96-115 ppb	56-75 µg/m ³
 LEVEL 5 Very Unhealthy	>115 ppb	>75 µg/m ³



Air Quality Forecast	
Today's High	Tomorrow's High
Air Quality Index (AQI) 87 Moderate Health Message: Unusually sensitive people should consider reducing prolonged or heavy exertion.	Air Quality Index (AQI) 92 Moderate Health Message: Unusually sensitive people should consider reducing prolonged or heavy exertion.
AQI - Pollutant Details	
Particles (PM2.5) 87 <u>Moderate</u>	Particles (PM2.5) 92 <u>Moderate</u>
Forecast Discussion: Wednesday through Friday, an upper-level ridge of high pressure will build over northern California, reducing vertical mixing in the atmosphere. In addition, light winds will limit pollutant dispersion in the Sacramento region. Therefore, particle levels will be Moderate on all three days.	
Current Conditions	
Air Quality Index (AQI) observed at 6:00 PST 100 Moderate	

5 Day Forecast

Air Quality Forecast

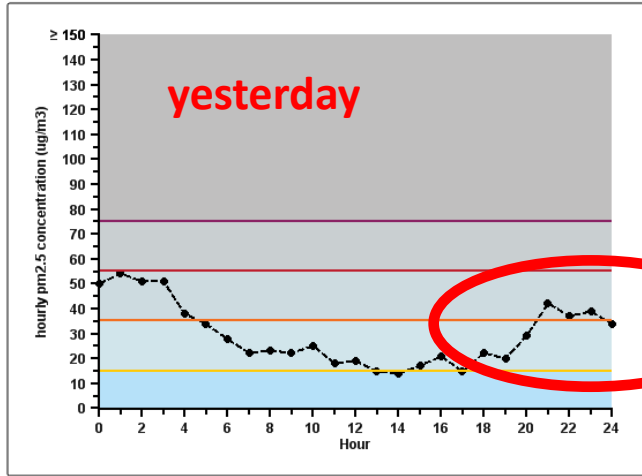
Wednesday, January 30 at 10:43 AM



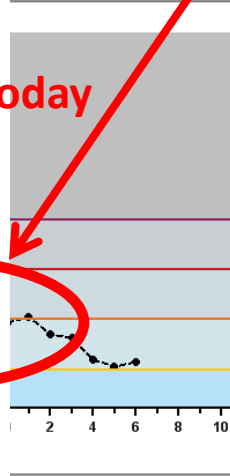
	Wed	Thu	Fri	Sat	Sun
North Counties	60 PM2.5	67 PM2.5	M PM2.5	M PM2.5	M PM2.5
Coast and Central Bay	49 PM2.5	49 PM2.5	M PM2.5	M PM2.5	M PM2.5
Eastern District	45 PM2.5	49 PM2.5	M PM2.5	M PM2.5	M PM2.5
South Central Bay	42 PM2.5	45 PM2.5	G PM2.5	M PM2.5	M PM2.5
Santa Clara Valley	52 PM2.5	52 PM2.5	M PM2.5	M PM2.5	M PM2.5

January 30 (Wednesday) & 31th (Today)

Fresno-Garland

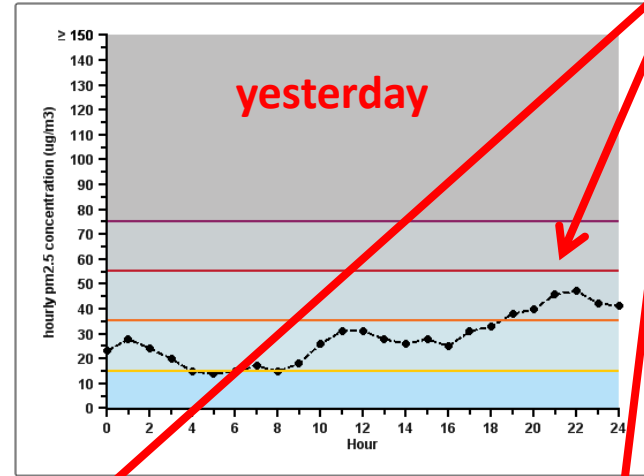


today

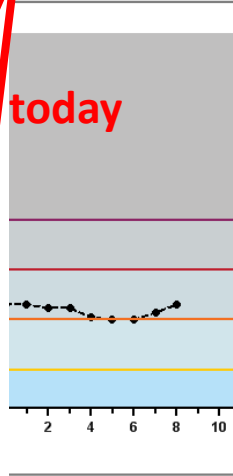


Similar behavior
as last two days.

Corcoran

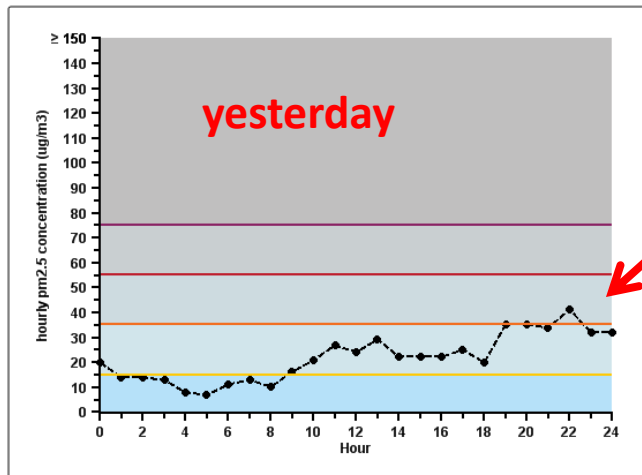


today

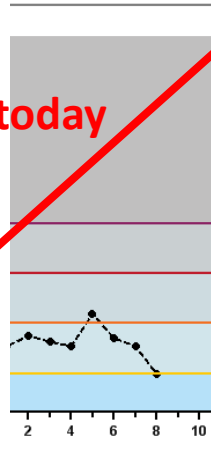


PM2.5 on
the rise!

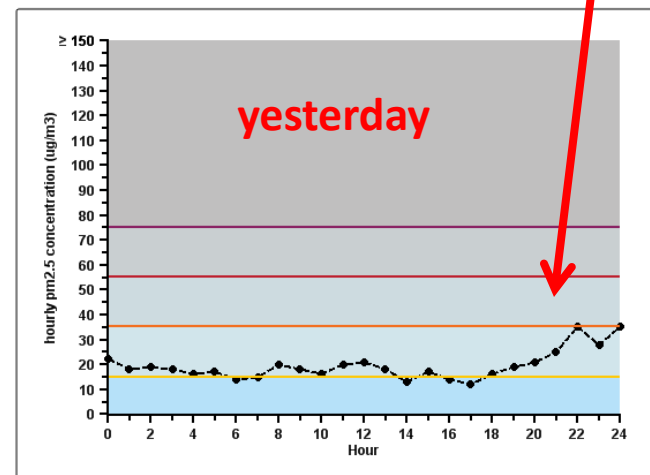
Bakersfield



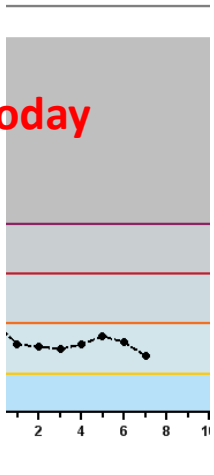
today



Stockton



today



Bakersfield to Fresno (South SJV)

Fresno should be code yellow today, though the last 3 nights have featured elevated PM2.5 (40-55 ug/m3). Could be due to an inversion, but SJV APCD forecaster unsure.

SJV:

Overall, PM2.5 levels should build by a couple ug/m3 each day for Wed.- Wed. – a sustained event.

Friday should be the peak day. Traffic generally higher, which may contribute.

Weekend levels should drop only slightly (~upper 20's ug/m3).

Levels should build into next week to mid-upper 30's ug/m3 by Tues. and/or Wed.

The SJV should be cleaned out by Thursday.

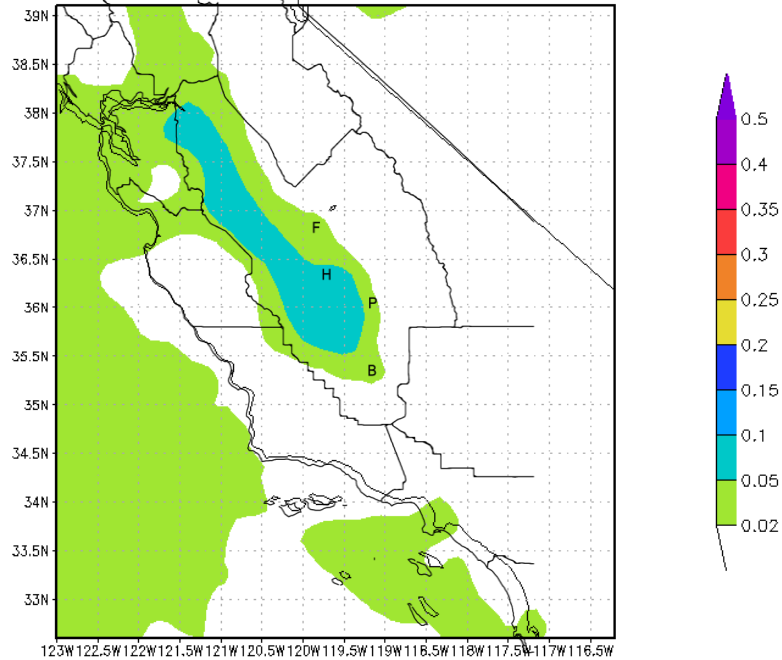
Fresno to Yuba City (North SJV)

The evolution of PM2.5 should be similar as in the south SJV.

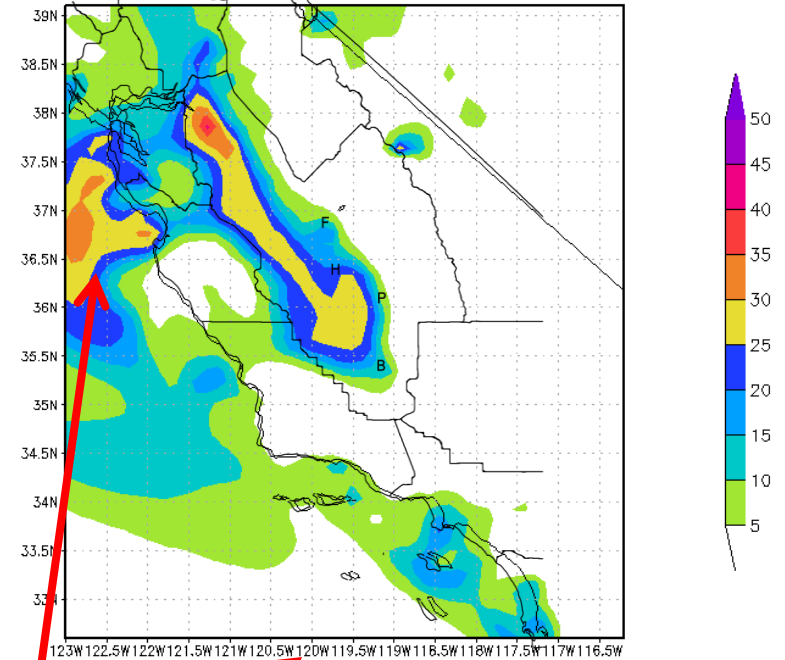
The north SJV is starting cleaner than the south SJV, so levels should stay a little lower there.

NOAA CMAQ: Friday 10 am = 18 Z

Column AOD [Dimensionless] at surface Valid 18 FEB 01 2013



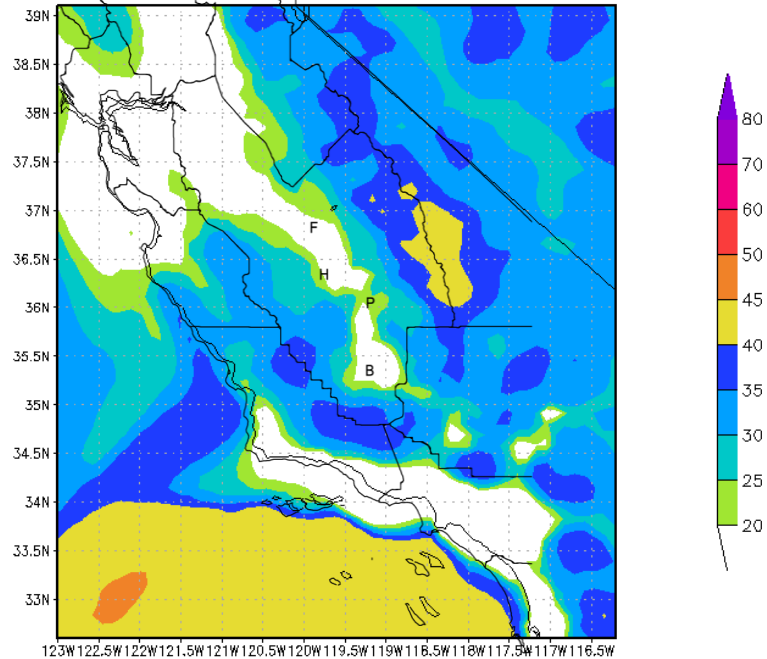
PM25 [$\mu\text{g}/\text{m}^3$] at surface Valid 18 FEB 01 2013



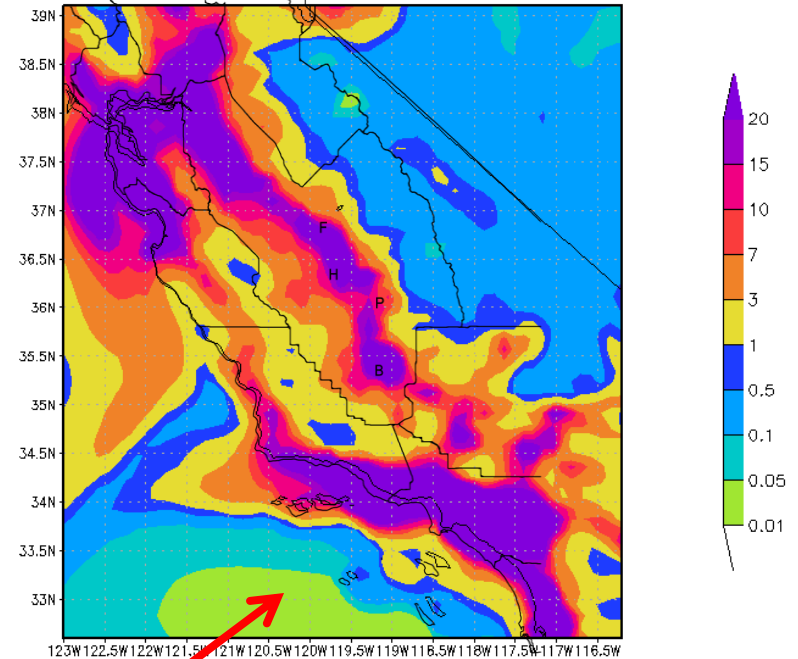
Pollution offshore

NOAA CMAQ: Friday 10 am = 18 Z

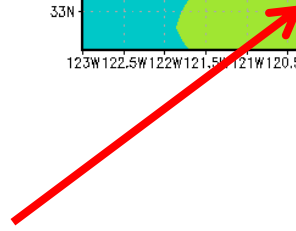
O₃ [ppb] at 1013 [hPa] Valid 18 FEB 01 2013



NO₂ [ppb] at 1013 [hPa] Valid 18 FEB 01 2013

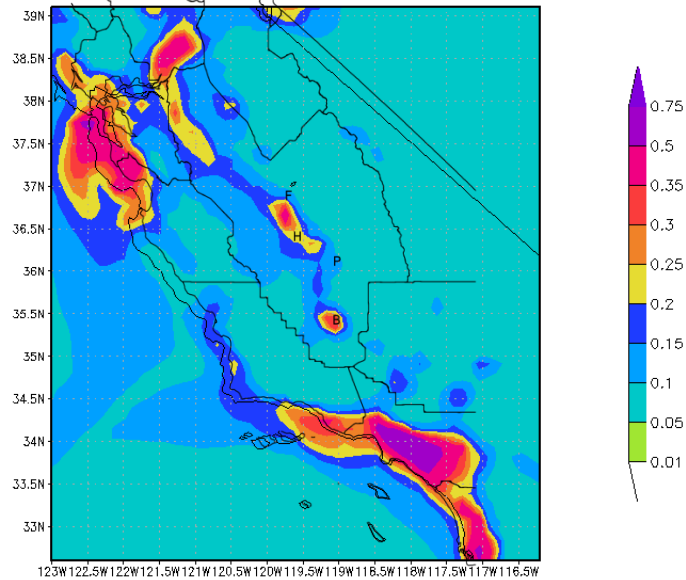


Pollution offshore

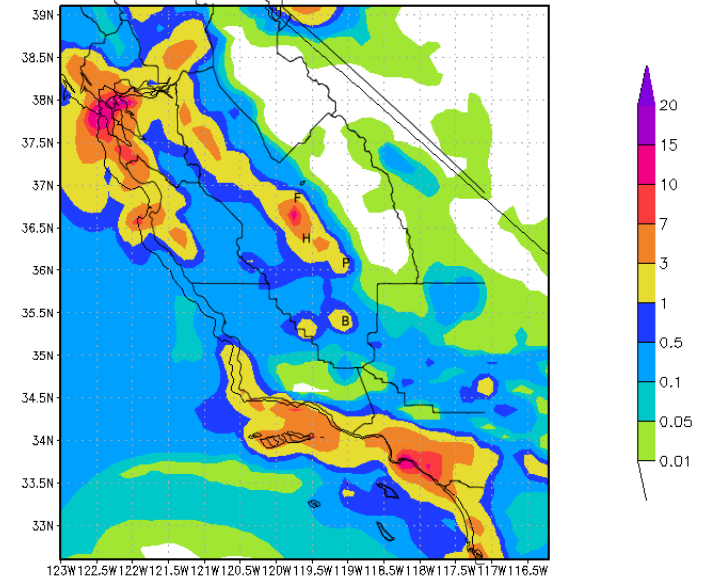


NOAA CMAQ: Friday 10 am = 18 Z

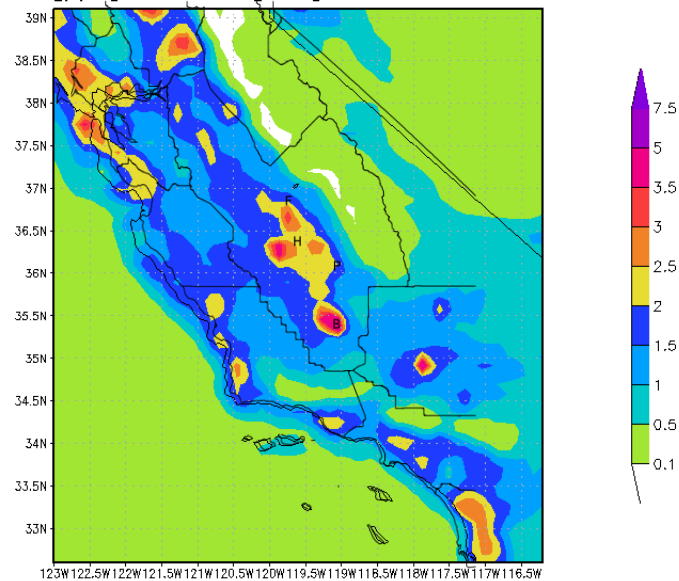
CO [ppm] at 1013 [hPa] Valid 18 FEB 01 2013



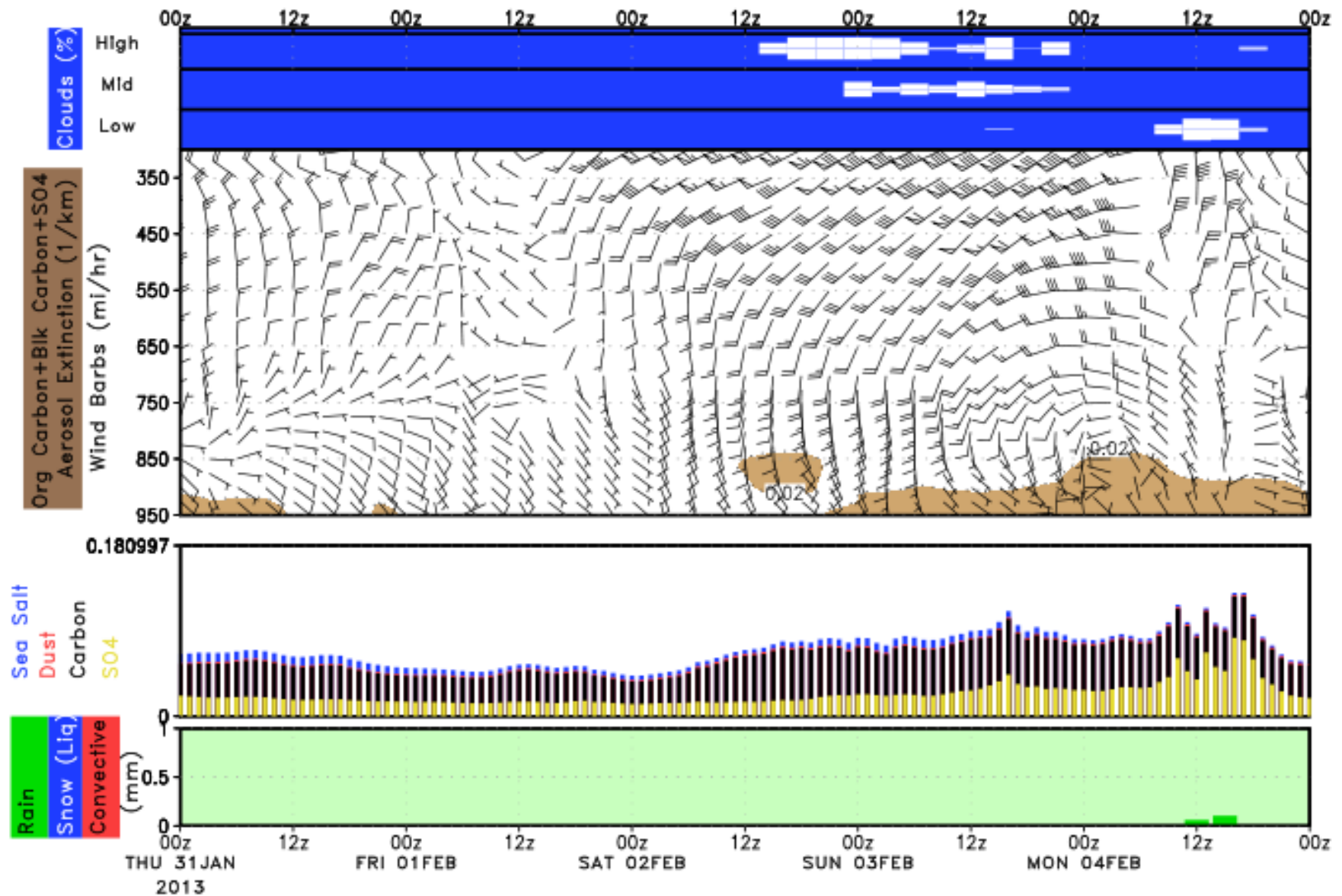
SO2 [ppb] at 1013 [hPa] Valid 18 FEB 01 2013



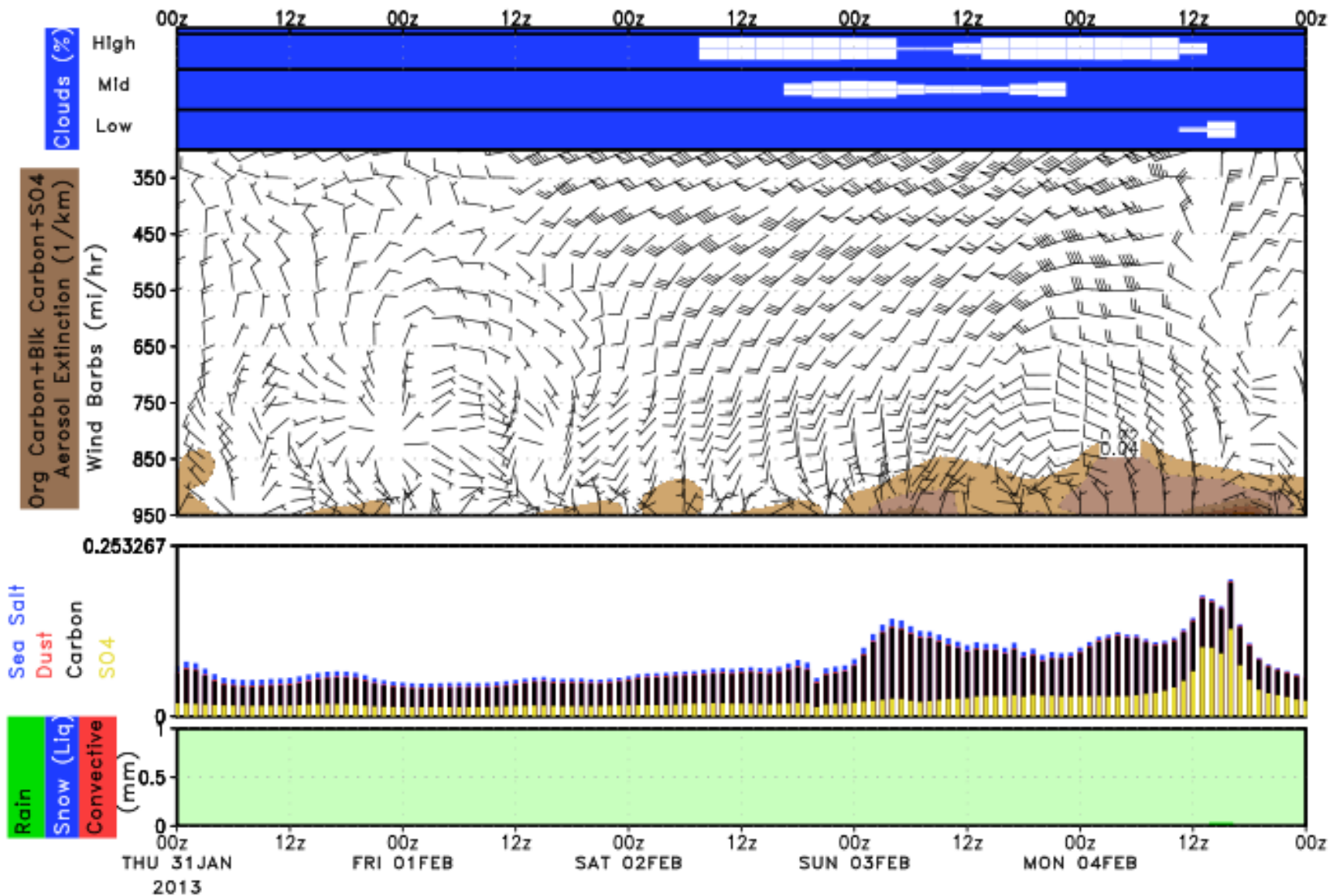
FORM [ppb] at 1013 [hPa] Valid 18 FEB 01 2013



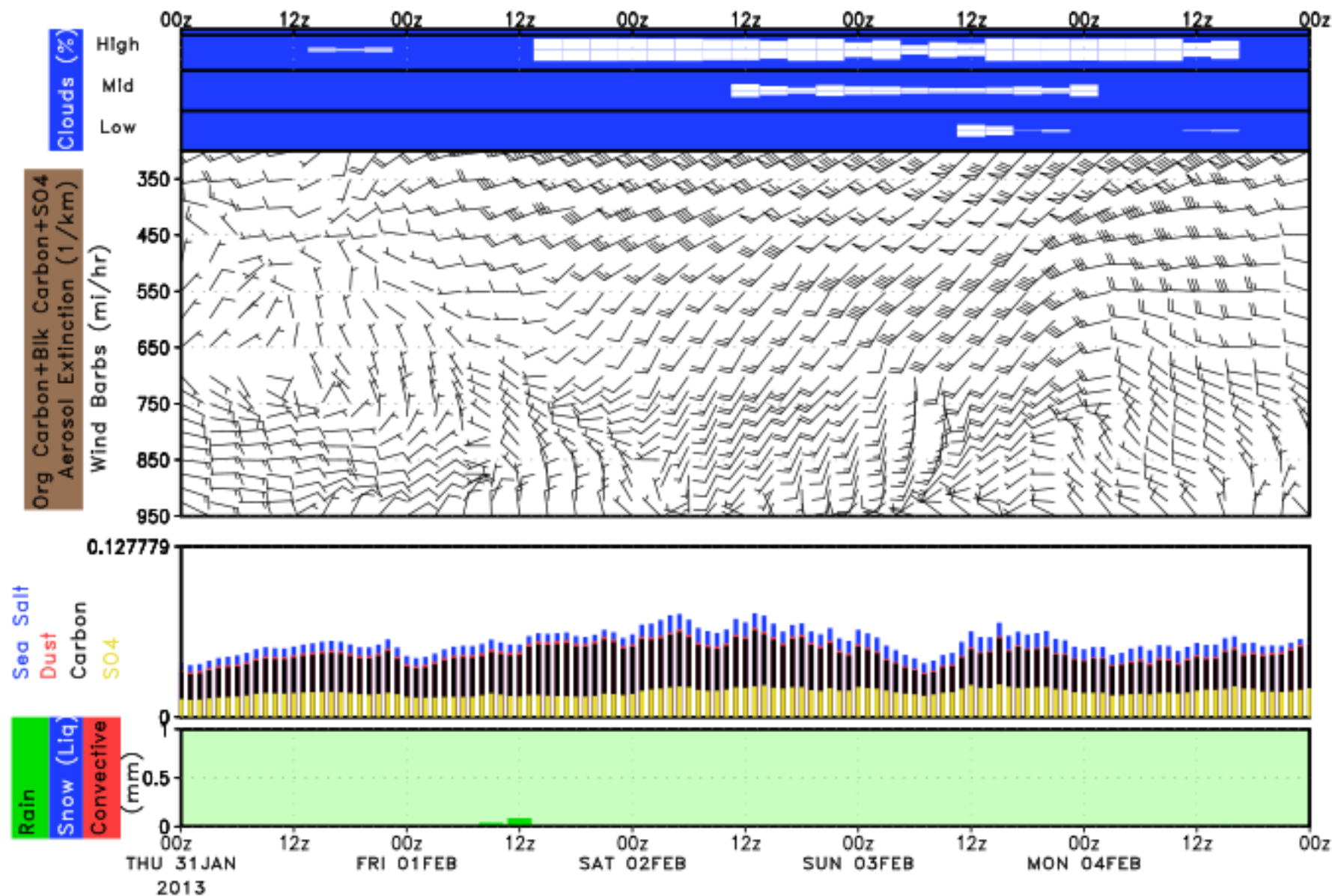
GMAO GEOS5: Fresno



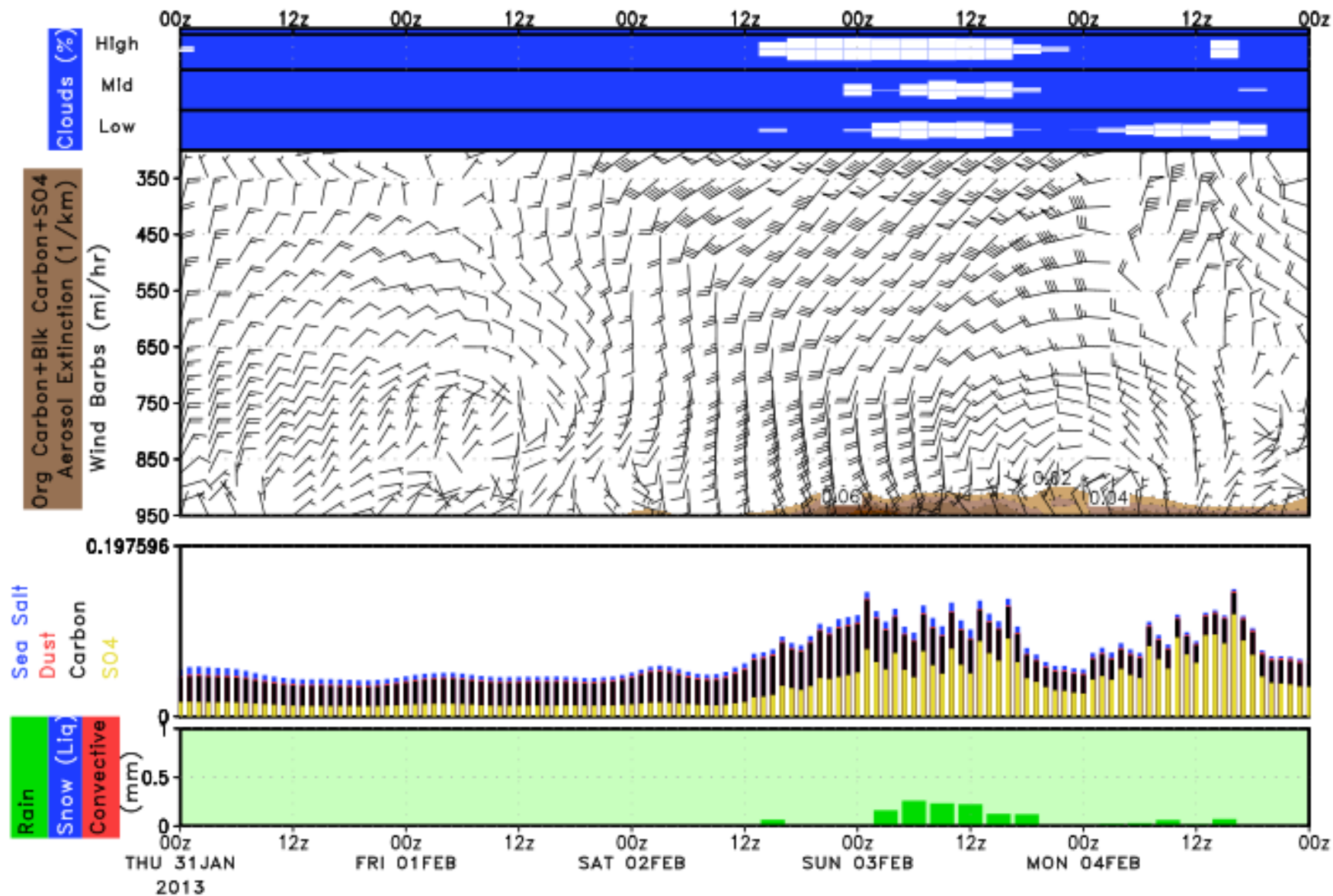
GMAO GEOS5: Bakersfield



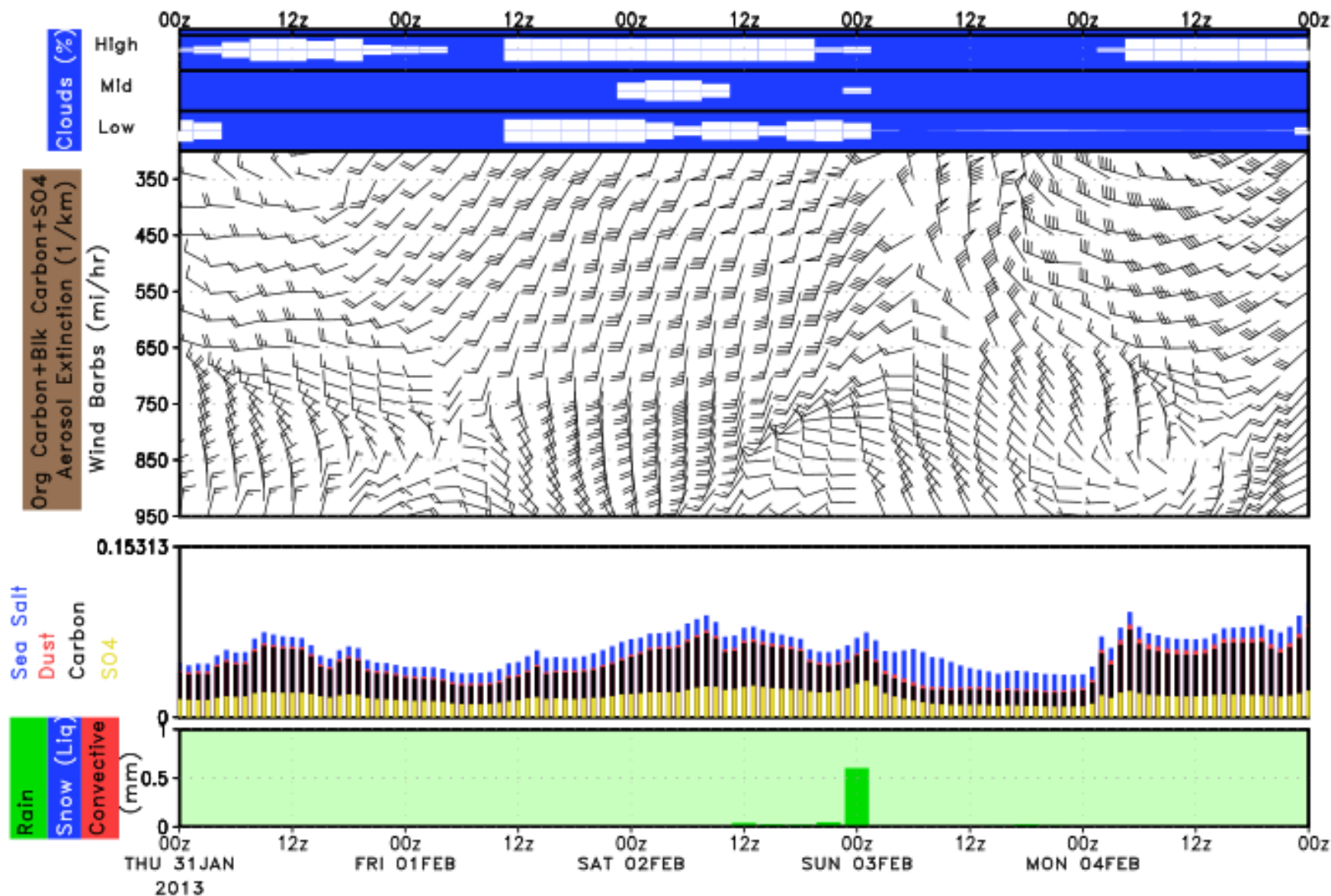
GMAO GEOS5: San Nicolas Is.



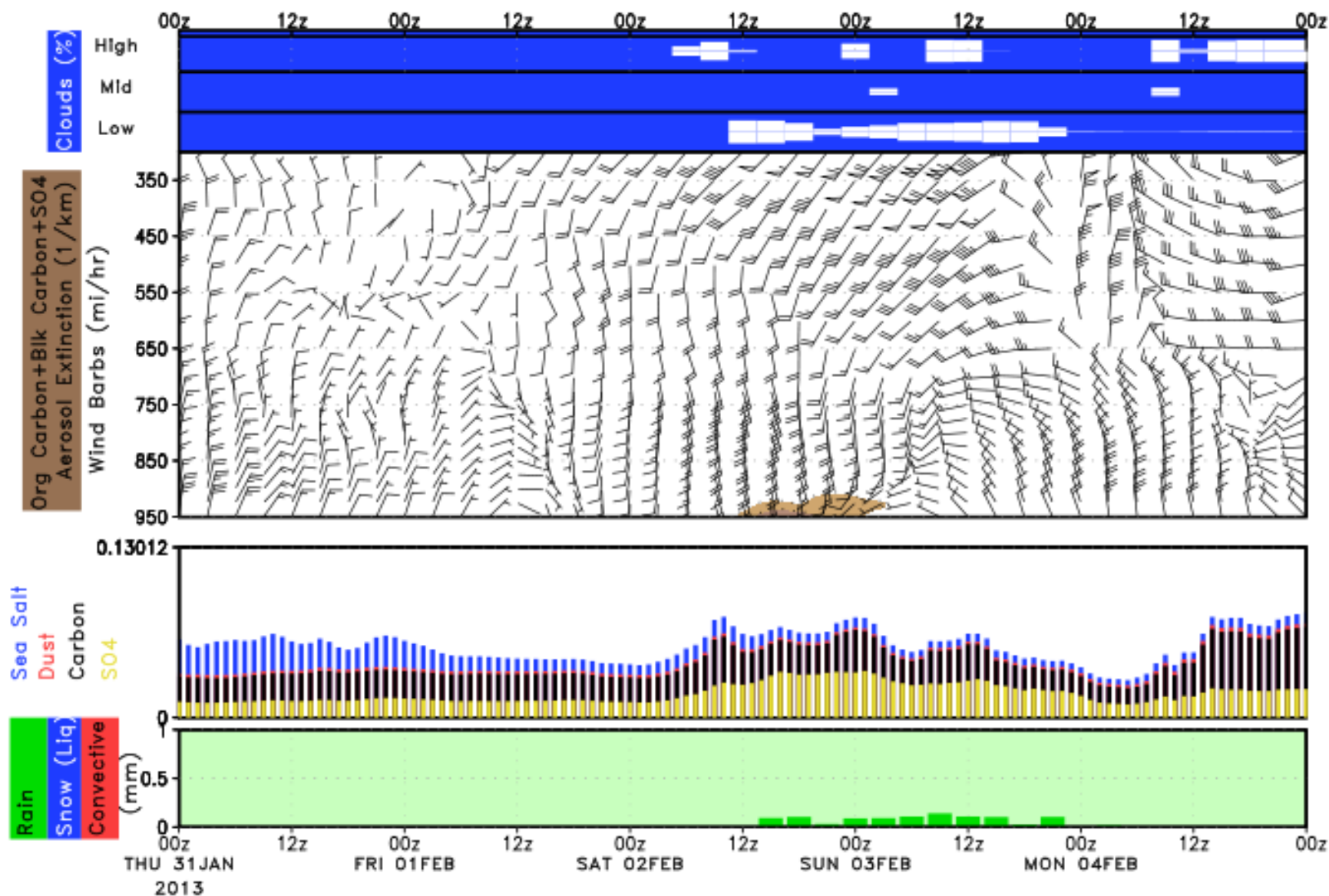
GMAO GEOS5: Monterey



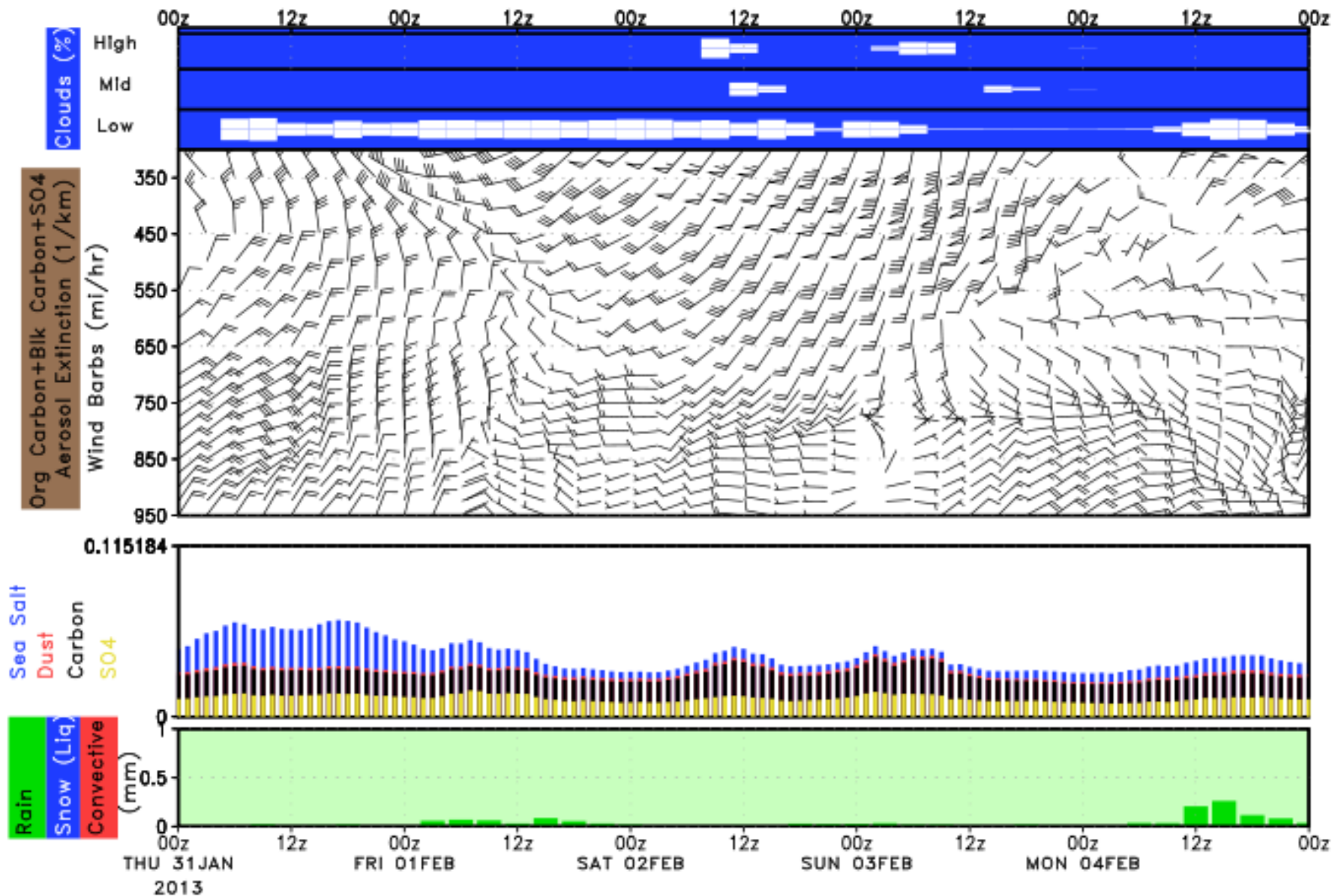
GMAO GEOS5: Ocean 40 N 130 W



GMAO GEOS5: Ocean 38 N 125 W



GMAO GEOS5: Ocean 30 N 130 W



Recommendations

Friday –

SJV (PODEX/D-AQ) – Fog in the morning a little more widespread than today, burning off by 9-10 am.

Models indicate high level clouds moving into the SJV around 1 pm. NWS forecaster forecasted patchy, thin cirrus entering the southern end of the valley around noon, followed by a thin cirrus layer. The cirrus are expected to be at ~30K ft.

PODEX coastal leg (Bay area) – Monterey NWS predicts stratus deck at least 50 miles off the coast tomorrow and minimal to no cirrus. The low level clouds are below ~1500 ft.

PODEX coastal leg (LA) – Oxnard NWS forecasted narrow patch of stratus within 50 miles of the coast, but the main lower level cloud deck would be out past 125+ miles off the coast. Models and forecaster predict high level clouds moving into the PODEX LA region by 10 am.

Note – Monterey forecaster thought that the low level cloud deck would be parallel to the coast, which forecasts more low level clouds near the LA region than the Oxnard office.

Recommendations

Saturday – SJV – Cloud deck lower, more ~15K ft. Cloud layer expected to be ~50% opacity.

Sunday – Models bringing in clouds at multiple levels

Rest of the week – The upper level trough is forecast to drop south Wed night, bringing the main trough through CA next Thursday. Both models currently show heaviest precipitation over the northern SJV on Thursday although uncertainty is an issue that far out. Prior to the event, high level clouds are expected Mon, Tue, and Wed and fog issues should be minimal.